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S. HRG. 103–828

OVERSIGHT OF THE REFORMULATED GASOLINE RULE

Y 4.P 96/10:S.HRG. 103-828

Oversight of the Reformulated Gasol...

HEARING

BEFORE THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDRED THIRD CONGRESS

SECOND SESSION

APRIL 22, 1994

Printed for the use of the Committee on Environment and Public Works

DEPOSITORY

FEB 8 1995

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OVERSIGHT OF THE REFORMULATED GASOLINE RULE

FRIDAY, APRIL 22, 1994

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, DC.

The committee met, pursuant to notice, at 9:06 a.m. in room 406, Dirksen Senate Office Building, Hon. Max Baucus [chairman of the committee] presiding.

Present: Senators Baucus, Wofford, and Lieberman.

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Senator BAUCUS. The hearing will come to order.

Today this committee is conducting an oversight hearing on the development of an important Federal Clean Air rule and negotiations to soften the rule for Venezuela, a major supplier of imported gasoline to the United States. This is a complicated matter involving senior officials at the White House, State Department, Environmental Protection Agency and the Office of the United States Trade Representative.

It is also an extremely serious matter, because I believe the committee has uncovered evidence that the Administration made a secret, environmentally unsound, agreement with Venezuela and is attempting to minimize the public health consequences of the deal. At issue is a rule to enforce new provisions of the Clean Air Act intended to reduce deadly chemicals threatening public health in sections of the country where tens of millions of Americans live.

The public and internal documents obtained by the committee show that EPA acted diligently and responsibly to develop and issue the reformulated gasoline rule. EPA designed the rule to prevent Venezuela, which had not adopted the environmentally sound technology used by United States refineries, from exporting gasoline which would contain much higher levels of toxic chemicals than domestic gasoline.

Venezuela was unhappy. I believe the EPA, the State Department, and the USTR thoughtfully considered Venezuelan grievances during this period. At first EPA did not acquiesce to Venezuela's demand for special treatment, because agency officials decided that doing so would create adverse health consequences. But after the rule was issued on December 15, 1993, a chain of troubling events ensued, raising a number of questions that I intend to have answered today.

Without informing the Congress in any way whatsoever, the White House National Economic Counsel convened closed door meetings about Venezuela's demands. As a direct result of those meetings, EPA agreed to issue a special new rule that would allow Venezuelan imports to be dirtier on average than United States gasoline. It was done with the knowledge that there would be significant adverse health consequences resulting from this new rule, and we will not tolerate improper White House political interference in EPA regulatory matters adversely affecting public health.

Members of Congress will not tolerate inappropriate interference in the regulatory process, especially when it involves the 1990 Clean Air Act Amendments that so many worked so hard to pass.

The events we will be reviewing today all relate to the December 15, 1993 final rule issued by EPA that requires all gasoline sold in certain areas of the country with unhealthy levels of ozone and other air toxics to use cleaner reformulated gasoline. The rule is especially aimed at northeastern states, where 6 percent of the gasoline used comes from Venezuelan refineries.

I would like to first state that this is an oversight hearing, and consequently it is necessary swear in the witnesses. Will all the witnesses please stand and raise your right hand?

Do you swear and affirm that your testimony today will be the truth?

[Witnesses respond in the affirmative.]

Senator BAUCUS. I have a series of questions I'll ask. Other members of the committee may arrive, and if they do, I'll appropriately defer to them so that they can ask questions. But if no other members come, I'll just proceed with my questions.

STATEMENTS OF MARY D. NICHOLS, ASSISTANT ADMINISTRATOR, OFFICE OF AIR AND RADIATION, ENVIRONMENTAL PROTECTION AGENCY; EDWARD A. CASEY, DEPUTY ASSISTANT SECRETARY FOR INTER-AMERICAN AFFAIRS, DEPARTMENT OF STATE; IRA SHAPIRO, GENERAL COUNSEL, OFFICE OF THE U.S. TRADE REPRESENTATIVE; AND JOHN A. RIGGS, PRINCIPAL DEPUTY ASSISTANT SECRETARY, POLICY, PLANNING, AND PROGRAM EVALUATION, DEPARTMENT OF ENERGY

Senator BAUCUS. The Clean Air Act Amendments of 1990 require that the levels of ozone and other air toxics in certain polluted areas of the country be reduced. Pursuant to the amendments, did EPA—I'll ask you, Ms. Nichols—issue a rule on December 15, 1993, requiring in specific areas of the country, particularly the Northeast and Mid-Atlantic states, to use only reformulated gasoline?

Ms. NICHOLS. On December 15th, Mr. Chairman, we issued the specifications for reformulated gasoline, pursuant to the Clean Air Act. As you recall, the Act required the nine smoggiest urban areas in the country to use reformulated gasoline, and in addition to that, other states were allowed to petition to use reformulated gasoline. This rule specified the exact requirements for that reformulated gas.

Senator BAUCUS. So the answer is yes?

Ms. NICHOLS. Yes.

Senator BAUCUS. EPA is using this rule, as you say, to regulate ozone, and that's because ozone causes serious respiratory illness; is that correct?

Ms. NICHOLS. The rule is aimed primarily at ozone, also at toxics.

Senator BAUCUS. And air toxics.

Ms. NICHOLS. Yes, that's the underlying purpose.

Senator BAUCUS. I was next going to state that the rule also regulates air toxics, because they cause 50 percent of cancer deaths attributed to motor vehicle emissions in the United States; isn't that correct?

Ms. NICHOLS. I'm not sure that I could verify that statistic, but we certainly are concerned about the toxics, because of health effects, including——

Senator BAUCUS. Under the December 15 rule, which is the final rule that EPA issued, refineries will have to certify reformulated gasoline by meeting certain standards. What are the standards and how will they be determined for each refinery?

Ms. NICHOLS. There's a table included in the rule for the initial phase and then for the second and third phases of the rule, Mr. Chairman. I submitted that table, it's a rather lengthy document.

Senator BAUCUS. All right.

Essentially, from 1985 to 1988, the refiner used a simpler model, and after 1988, all refiners must use a complex model, and they say it is pretty complex, that measures physical and mechanical properties of gasoline to predict levels of VOCs, the NO_X and air toxics, motor vehicle emissions, relative to 1990 U.S. average gasoline. That's essentially it, isn't it?

Ms. NICHOLS. That's essentially correct. Maybe it would just add a little clarity to say that in the first phase of the program, between 1995 and for the three years, 1995, 1996, and 1997, the program in focusing on VOCs and toxics specifically regulates the addition of oxygen, it requires the addition of oxygen and it reduces lead vapor pressure and the benzene content.

Senator BAUCUS. Right.

Ms. NICHOLS. After that you go to the complex model and more factors are controlled.

Senator BAUCUS. And after January 1, 1998, under the December 15 rule, all refiners, both foreign and domestic, must achieve pollutant reductions relative to 1990 U.S. baseline average, but prior to that date, refiners will be required to reduce pollutants in relation to 1990 baseline averages they set themselves. Is that correct?

Ms. NICHOLS. That is correct.

Senator BAUCUS. With respect to certifying reformulated gasoline, would you briefly describe the differences in the rules and treatment of domestic and foreign refiners?

Ms. NICHOLS. The final rule that EPA promulgated on December 15th set up a procedure under which domestic refiners were permitted to submit data to EPA to establish their own separate baselines from which the necessary reductions would be made, and each one is to do so, and they will be doing so, in June of this year.

With respect to all others, that is those who important gasoline from foreign refineries, all were required to meet the-so-called statutory baseline, which was set by Congress based on data that we don't, aren't sure where it came from, but we believe it was based on samples of the average fuel that was then being sold in the United States.

Senator BAUCUS. Why did the rule propose that foreign refiners must meet the statutory standard rather than allow refiners to set a level—as the rule provides for domestic refiners?

Ms. NICHOLS. The reason for creating a distinction between foreign and domestic refiners came about during the process of development of this rule, which as you may recall, Mr. Chairman, began back in July of 1991. There was a regulatory negotiation process in which all refiners, foreign and domestic, were treated the same.

But subsequent to that, EPA began to be concerned about quality of the data and the enforceability of the information that might be used for a foreign refiner who would be trying to establish their own baseline primarily because of issues about mixing of gasoline before it was sold in the United States and the lack of ability to trace gasoline coming into the United States directly back into the refinery where it came from. And so EPA, in December in the final rule, decided to put all foreigners into one pool and make them subject to the statutory baseline.

Senator BAUCUS. And that explains the rule's preamble, which states, "EPA has considered all proposed baseline setting alternatives for foreign gasolines to the final rule, and has determined that the rule issued today"—and that's December 15th of last year—"is necessary to protect the quality of U.S. air and public health.

"Further, the baseline setting scheme promulgated today is the least restrictive scheme available to ensure that the goals of the Clean Air Act are achieved." I gather, since this is contained in a final rule, this is a factual statement?

Ms. NICHOLS. It was a statement of the conclusion that had been reached at that time.

Senator BAUCUS. The distinction now in the rule apparently affects——

Ms. NICHOLS. Excuse me, Mr. Chairman, could I just add a statement here? I'm sorry.

I would like to say at this point, however, and we've certainly furnished this information to the committee, that at the time we released the rule, which was the day after it was signed by the Administrator at the press conference that I held, that we were asked questions and I specifically commented to the effect that on the issue of the reformulated baseline that EPA was still considering whether there was an alternative possibility with respect to foreign refiners, and that we were going to be continuing conversations on that specific topic.

Senator BAUCUS. The distinction, though, between foreign and domestic, isn't it true that it affects only one importer, a Venezuelan government-owned company known as PDVSA, isn't that true?

Ms. NICHOLS. No, that's not the case, Mr. Chairman. There are quite a number of foreign refineries who have gasoline coming into the U.S. market. Venezuela, however, we believe, is the largest, both in terms of total amount of gasoline and also the percentage of its product that is coming, that is made for export to the United States.

Senator BAUCUS. What foreign companies or countries that have been exporting refined gasoline, to the United States did EPA hear from or talk to during the two years preceding the December 15th final rule?

Ms. NICHOLS. The only one that I know of that was spoken to prior to December 15th was Canada, because there are companies that produce in the United States that also produce in Canada.

Senator BAUCUS. There were no discussions with Venezuela during this two-year period?

Ms. NICHOLS. No—I was then going to go on to say that Venezuela was obviously involved in those discussions. I'm not aware whether there were any other companies since the rule was finalized and the publicity about the conversations with Venezuela, as a result of my press conference and other events, I believe EPA has been contacted by other foreign refiners. I don't have the names of all of them.

Senator BAUCUS. Did any other foreign refinery, other than Venezuela, complain about the proposed rule, not the final rule, not the pending final rule?

Ms. NICHOLS. Not to my knowledge.

Senator BAUCUS. Only Venezuela complained?

Ms. NICHOLS. Yes, and that was actually a Venezuelan-owned oil company, PDVSA.

Senator BAUCUS. Thank you.

Isn't it true that mainly through its wholly-owned subsidiary, as PDVSA's wholly-owned subsidiary, CITGO, Venezuela exports 20 percent of its refined gasoline to the United States, and largely in the northeast nonattainment area for ozone and air toxics?

Ms. NICHOLS. I believe that's correct. Just to perhaps respond a little more fully to your question about Venezuelan complaints about the rule, Venezuela had been in communication with EPA beginning back, I believe, in 1992, about their interest in producing reformulated gasoline. Venezuela had begun the process of renovating their refineries in order to make reformulated gasoline explicitly for export purposes and Venezuela had taken the position as early as 1992 that they were able to furnish the same quality of data that domestic refiners were going to be producing. So they were in a unique position with respect to this rule in the U.S. market.

Senator BAUCUS. When did the United States Government first learn of Venezuela's displeasure on how foreign refiners would be treated under the rule, and how was that displeasure communicated?

Ms. NICHOLS. I think the first document that we have, which was put in the document of the rulemaking dated August 14th of 1992, when PDVSA filed comments opposing the baseline setting scheme being different for importers. I believe there were some meetings prior to that time.

Senator BAUCUS. All right, so that means prior to August 14th, 1992. The committee is aware of the August 1992, but at least it was no later than August of 1992 when EPA first learned of Venezuela's displeasure.

Ms. NICHOLS. Yes, and that follows on the April reproposal of the reformulated gasoline rule that grew out of the reg/neg process. So that was following on that.

Senator BAUCUS. What were Venezuela's complaints about how foreign refiners were being treated in the rule? What did they complain about?

Ms. NICHOLS. I wasn't present at the time, so all I have to go on are the same documents that are available to you.

Senator BAUCUS. You have a very able staff right behind you, telling you.

Ms. NICHOLS. And I have my staff, and I think that their comments have been the same throughout, which is that Venezuela produces gasoline which is acceptable in the U.S. marketplace, that their gasoline was overall equivalent in quality, that their ability to provide data was equivalent and those were the general kinds of statements that they were making.

But they didn't know until April that they were not going to be treated identically with other refiners, as I indicated at the outset.

Senator BAUCUS. Would it be true, under the December 15 rule, that Venezuela would probably have to make some capital expenditures to upgrade its refineries to meet the provisions of the December 15 rule?

Ms. NICHOLS. That certainly is true, and to our knowledge, Venezuela is in the process of making changes to their refineries.

Senator BAUCUS. Is it also true that any other foreign refinery would have to make this change, to meet the standards, the 15 percent reduction in the December 15, 1993 rule, in all probability would have to make some capital expenditures?

Ms. NICHOLS. Yes; it's our understanding that there are some companies that now sell gasoline in the United States that will not attempt to sell reformulated gasoline because they don't wish to make those kinds of alterations to their refineries.

Senator BAUCUS. As the December rule states, EPA rejected these concerns of Venezuela in order to protect public health and air quality. The agency did not dismiss Venezuelan complaints easily. Isn't it true that EPA worked very closely with PDVSA representatives for nearly two years to try to find a way to accommodate them?

Ms. NICHOLS. I don't think that's quite the characterization that I would put on it, based on my examination of the staff and of the record in this case. I think that Venezuela from the time of the notice in April onward sought various meetings with the staff and attempted to provide documentation and kept providing additional documentation to support their contention that they could meet the same standards as any domestic refiner in terms of the quality of the information at a baseline, that would be needed to set a baseline.

But frankly, the staff of EPA was primarily focused on other aspects of this rulemaking which were more important, or seemed more important to them and to me, in terms of the overall quality of fuel and the environmental benefits of fuel.

Senator BAUCUS. So EPA did assess the health risks involved in assessing PDVSA's request?

Ms. NICHOLS. EPA's concerns with primarily with respect to whether a foreign country's refinery could be, whether the constituents, the components of their gasoline could be evaluated in the same way, whether the quality of the documents would be the same, whether they would be audited in the same way, whether they would be subject to the same kind of inspection. Those were the principal focuses.

We knew, Mr. Chairman, that Venezuelan gasoline was part of the pool of gasoline that was originally evaluated as part of setting the baseline under the Clean Air Act. Venezuelan gasoline has been sold in the United States market for many, many years, and has been tested at the retail level. The concerns had to do with the refinery and the supporting process.

Senator BAUCUS. A few more questions, then I'll turn to the Senators who have arrived.

On November 2d of 1992, an attorney in the Office of Air Radiation prepared a response to PDVSA's concerns. He determined that changing the rule to accommodate Venezuela could result in increased ozone levels in the United States. He said that ozone causes respiratory harm and damages the lungs and other tissues, and he said that ozone impairs the immune system.

He said, and I'll quote directly from his memorandum,

> Violations of the national ambient air quality standard for ozone are considered a serious public health concern. Reduction in exposure of humans to ambient concentrations of particulate matter is associated with reduction in morbidity and mortality.
>
> The treatment of foreign refiners proposed in the regulation is necessary to ensure that the public health benefit sought by Congress in enacting the Clean Fuels provision of the Act are accomplished.

[See Appendix 1, p. 92, for complete text of memorandum.]

Senator BAUCUS. So when EPA published its final rule on December 15th without acquiescing to Venezuelan concerns, isn't it true that you did so because you were acting to literally enforce the Act and save the lives of many Americans and prevent illnesses?

Ms. NICHOLS. I think throughout this rulemaking process, Senator Baucus, EPA's primary concern has been to protect public health and the environment, and that will continue to be our concern as we move forward with the implementation of the rule or with any subsequent amendments that may be made to it. The document that you quoted from accurately states that health concerns that we have about ozone, this rule obviously is aimed at reduction of overall ozone levels.

But I think it's important that you and the committee understand that the issue about the baseline and whether Venezuela will be allowed to petition for a separate baseline or not is being evaluated in the context of the overall enforcement and effectiveness of the rule itself. It is not EPA's intention, nor would we allow any changes to be made that would undermine the effectiveness of this rule overall in achieving the ozone reduction benefits that Congress has planned to achieve from this rule.

But it's also important to point out that each gasoline that's sold in the United States has slightly different components, Venezuelan gasoline, about which we now have a lot of data that has been submitted to us, is actually cleaner than the average domestic gasolines that are sold here in terms of volatile organic compounds and toxics, both of which were the two primary goals of the reformulated gasoline rule.

Senator BAUCUS. Ms. Nichols, we're talking about ozone right now.

And Venezuelan gasoline has much higher concentrations of olefins, which is a precursor to nitrous oxide, as you know, as well as anybody in this room, combined with VOCs, causes ozone.

Ms. NICHOLS. Yes, that's true.

Senator BAUCUS. So we're focusing right now on the reg/neg and its effect on ozone levels, particularly in the northeastern states, and it is true that Venezuelan gasoline is significantly higher in precursors of substances which cause increased ozone. That's undisputed.

Ms. NICHOLS. It is higher in some components but lower in others.

Senator BAUCUS. That cause ozone?

Ms. NICHOLS. Both of which cause ozone. And overall, under the rule, all of those will be reduced.

Senator BAUCUS. But isn't it true that you concluded that treating Venezuela the same as domestic refiners would result in a 14 percent increase above U.S. refiners average in nitrous oxide emissions, northeast non-attainment zones?

Ms. NICHOLS. If Venezuela were to be allowed to use their own baseline, the gasoline that they would be selling for the three-year period until the complex model comes into effect would have a higher than average level of NO_X, nitrogen oxide, excuse me, and a lower than average within the total pool level of benzene and VOCs, and overall, therefore, and even the level of the NO_X would be within the range of other domestic gasolines that will be sold under this rule.

Senator BAUCUS. One purpose of the reg/neg is to lower the ozone levels in the northeast, the effect of letting the Venezuelan gasoline in under the Venezuelan proposal would increase ozone in the northeast?

Ms. NICHOLS. No, it will not increase ozone in the northeast, Mr. Chairman. It will only increase the amount of NO_X which is there——

Senator BAUCUS. Which is the precursor, primary component in the formulation of ozone.

Ms. NICHOLS. It's one of the two components, but the point is here that this gasoline, like every other gasoline, is going to get a 15 percent reduction in VOCs, and hold NO_X at baseline levels, which is exactly what the Clean Air Act says that reformulated gasoline is supposed to do.

Senator BAUCUS. The December 15th rule had that effect?

Ms. NICHOLS. The December 15th rule, Mr. Chairman, required Venezuela to do more in the way of reformulating its gasoline to achieve a lower level of NO_X to go beyond what would be required of any domestic company.

Senator BAUCUS. December 15th?

Ms. NICHOLS. Yes.

Senator BAUCUS. As of December 15, 1993, that's correct.

I would like now to turn to Senator Wofford, under the early bird rule, you're the first to be recognized.

Senator WOFFORD. Mr. Chairman, thank you. Happy Earth Day.

Senator BAUCUS. Thank you.

Senator WOFFORD. Today's hearing certainly demonstrates that environmental issues are indeed global and I trust that we all understand that when we're talking about the Earth, we're talking about the air that makes life on Earth possible.

I want to thank you, Senator Baucus, for the hearing, and for taking the leadership in putting Senate Resolution 197 on the table, which I joined in, and a number of other Senators have joined in. It states the propositions that lead to a great concern that after all the efforts we've put into the Clean Air Act, the gains could be wiped away by granting waivers. In Pennsylvania, the Philadelphia area is currently classified as a severe ozone non-attainment area under the Clean Air Act. And this, as you know, has far-reaching implications for residents and businesses in that whole Philadelphia region.

As a result, we're considering aggressive control measures, including unpopular programs such as the Employee Trip Reduction Program. The goal is to reduce emissions from mobile sources like cars through increased car pooling and mass transit. Though there is serious question on how this has actually worked, I've met with a lot of the concerned people from the Philadelphia area on this issue.

But all efforts we're making will go to waste if waivers are given that will increase the emissions into the air. So I guess one of the first round of questions, I think I already see the answers, is would Philadelphia area commuters and commuters in the northeast be required to increase carpool efforts as a result of the implementation of this rule?

Ms. NICHOLS. Absolutely not, Senator Wofford. We have looked at the impact if the proposal to allow a foreign company to apply for a baseline identical to a domestic company were to go forward, and if Venezuela were to apply and receive its own baseline, which is not a waiver, but simply identical treatment to what domestic refiners would get.

The differential effect in terms of NO_X emissions, and we can't do this by city, but we can do it throughout the marketing territory, which is roughly coincident with the New England region, is approximately 0.08 percent of NO_X. And that differential, I have checked with our experts in ozone modeling, is not detectable within the margin of error that we use to evaluate control strategies for ozone attainment.

I'm not trying to say that I would minimize any amount of NO_X emissions as being de minimis or unimportant. But in terms of what would be required of the Philadelphia region in order to demonstrate attainment and whether other measures would be required to make up for such a differential, the answer is no.

Senator WOFFORD. Isn't this a matter of sufficient importance so that with respect for your judgment and your experts, these issues should be considered in public hearings with notice and opportunity for others to comment on the same question and many other questions? Will that happen under the procedures that you're suggesting, or will this rule go into effect without such public notice and hearing?

Ms. NICHOLS. No, the process that we're in now is that the Administrator has issued, as of yesterday, a proposal seeking public comment on the possibility of allowing a foreign refiner to petition for a separate baseline under the final reformulated gasoline rule. This will go through a comment, a notice of comment proceeding, no action would be taken until EPA has evaluated the comments, and we are specifically seeking comments on both the environmental effects of the proposal and also whether there are any alternatives which might be preferable from an overall environmental point of view, and in addition to that, we will hold a public hearing before moving forward with any final rule.

Senator WOFFORD. I'm glad to hear that.

Is Venezuela the only country so far to have protested the refiner baseline rule?

Ms. NICHOLS. Yes. Venezuela is the only country as far as we know that has the capability of documenting what their chemical formulas and components were going back to 1990, similar to a U.S. refinery, and they are the only country which has offered to subject themselves to the same or in fact more stringent enforcement procedures, which we would propose to require.

We are concerned about our ability to enforce in a foreign country, and one of the elements of the proposal that we have put forth is that any country that wanted to petition for its own baseline would have to agree to permit inspectors from the United States to be in their refineries upon no warrant, no notice whatsoever. That's with submitting audited reports and all the other requirements that we would place upon a domestic refiner.

Senator WOFFORD. Are you concerned that if this rule were to be adopted that other nations will ask to come under its shield?

Ms. NICHOLS. I think there will be other countries that will be interested in applying for their own baselines for conventional gasoline, but this is something that would not consider. And in the proposal, we specifically excluded any consideration of separate baselines for a conventional gasoline.

Senator WOFFORD. Thank you.

Senator BAUCUS. Thank you.

Senator Lieberman?

OPENING STATEMENT OF HON. JOSEPH I. LIEBERMAN, U.S. SENATOR FROM THE STATE OF CONNECTICUT

Senator LIEBERMAN. Thank you, Mr. Chairman, and thanks to you and your staff for looking into this issue, which is very important to our implementation of the Clean Air Act Amendments. I also want to wish you all a Happy Earth Day and state with pride that I'm wearing my Jerry Garcia wetlands tie today. [Laughter.]

For ozone non-attainment areas, such as the entire State of Connecticut, this reformulated gasoline program is probably the single most important section of the Clean Air Act Amendments. It's very significant, and I guess this discussion today shows as we go from global and more conceptual concerns and policy goals, and ideals and values expressed in our celebration of Earth Day, a lot of it comes down to some highly complicated factual judgments and some very sensitive and sophisticated requirements on administrators to carry out this program. But obviously, if we want to protect the environment, we've got to, if I'm not mixing my metaphors, get down into the nitty-gritty to make sure it all comes out right.

For the first time, the 1990 Clean Air Act Amendments did recognize that while we still need to achieve improvements in automobile emissions that we really failed to clean up what was going into the car, and in that sense, though I think there is more we could do to push Detroit forward here, the truth is that we did require, we have required more of Detroit than we have of the oil companies over time. The reductions to be achieved from reformulated gasoline will bring non-attainment areas a long way toward achieving clean air.

But just to state the obvious, and the obvious matters here to people in states like Connecticut, to the extent that we get fewer emission reductions from the reformulated gasoline that the law allows, the factories and other businesses that emit pollutants in non-attaintment areas will be forced to make even greater compensating reductions which will be more costly or inconvenient and have a more significant impact on jobs, or may have a more significant impact on jobs in our states. And that's why this somewhat arcane or detailed discussion is so important to us in states like Connecticut.

In my view, the most important question that we need to examine today is whether EPA believes that it now has in place a system for verification, certification and enforcement with respect to the Venezuelan data. And the question there is, the relevant question is, what has changed since the time EPA issued its final rule? Is the system set forth in the proposed rule different than the one EPA previously considered?

The second question I believe we should address today is the basis for EPA's proposed reversal of its final rule. The U.S. Trade Representative, I think, needs to set forth clearly for us what its advice to EPA was with respect to whether EPA's final rule violated GATT.

And the third area that I for one want to understand more clearly is the impact on air quality of EPA's proposed rule change. The data that I've seen appears to establish that Venezuelan product is dirtier than the average American 1990 baseline gasolines for certain constituents, namely olefins, which contribute significantly to NO_X formation, which is critical to us in the northeast, because reductions of NO_X are vital to achieving attainment, which is to say clean air, in the northeast.

But the data also seems to indicate that the Venezuelan gasoline is actually cleaner in other constituents than the American baseline, although from a parochial point of view, I have to say that those constituents may not be as critical to our efforts in the northeast to reduce ozone levels.

What I don't know is how the quality of Venezuelan reformulated gasoline will compare to the quality of reformulated gasoline produced by every individual American refinery. One-half of the American refineries are producing gasoline which is below the 1990 average. Last week I sent EPA a set of written questions which aimed at determining how the quality of the reformulated domestic gasoline which will be used in the northeast will compare with the quality of the gasoline imported from Venezuela under the new agreement and how the impact on air quality would differ with use of each of those products. The answer to those questions about air quality are obviously also important in the context of GATT.

So, Mr. Chairman, without wanting to indulge too much on your patience, I wanted to just ask two sets of questions off of that statement. One is, to Ms. Nichols, how will the quality and again to state the obvious, which has been stated before, an awful lot of the Venezuelan oil comes into the northeast, so it's important to us, how will the quality of Venezuela reformulated gasoline compare with the quality of reformulated gasoline produced by each domestic refinery that serves the northeast.

And if you're able, either in oral testimony today or to be followed with a written answer, I'd like to know the answer both in terms of a comparison of the quality of each of the constituents of the gasoline and in terms of a comparison of the overall impact on air quality of the Venezuelan gas and each domestic refinery that serves the northeast. It's not a simple question, but unfortunately, that's the question that my own path of inquiry on behalf of the northeast, and particularly Connecticut, leads me to.

Ms. NICHOLS. Well, first of all, I would just like to say that I appreciate the path that you've laid out in terms of the questions that you're asking. I think those are the correct questions, and I also appreciate your statement with respect to the importance of the overall reformulated gasoline rule in the grand scheme of our hopes for achieving the ozone standard in the northeast and in all the other severe non-attainment areas for ozone, the reformulated gasoline rule is certainly one of, if not the most important rule that we've been involved with under the 1990 Clean Air Act Amendments.

I think it is important for me to say, not only for myself but for the staff at EPA that we are keenly aware of our obligations and have no desire to do anything but to achieve the maximum possible results from reformulated gasoline in the way of protection of the atmosphere, protection of public health and the environment. Our concern throughout has been to try to develop a rule that would achieve the maximum results for air quality, while at the same time being something that was capable of being administered and enforced fairly and equitably, and that is what we are trying to do, and what we have been trying to do throughout.

In looking at the issue of whether a country which exports gasoline, finished gasoline product to the U.S., could be treated equally or allowed to be treated equivalently to domestic companies, EPA has tried to address the questions that you have raised. One of the questions that you asked was to compare the quality of Venezuela's gasoline with individual U.S. refiners. That is not something that we are able to do at this time, because the domestic refiners have not yet submitted the same quality or quantity of data that Venezuela has submitted to us, because their petitions won't be coming in until June.

So at this point, all we can really address is the average and the pool of gasoline that's available in the New England area, and even there, the data that we have are broken down at best by states, not by the kind of fine distinctions that we might like to be able to make in terms of urban areas.

But within that, given that quality of the data, what we can say is that if we are to, if we were to go ahead and make final a rule which allowed Venezuela to petition for a baseline identical to a U.S. company that it would be treated in exactly the same manner as the domestic companies, that is, all gasoline that would be sold would be getting a 15 percent reduction in VOCs, all would be getting a 15 percent improvement in toxic emissions, and all of them would be held at the 1990 levels for NO_X.

So the only issue that we're really focusing on here is whether Venezuela will have to reduce NO_X below the average versus holding steady with its own NO_X content as opposed to what the domestic companies will be allowed to do. And it's that increment of NO_X reductions that we might be able to squeeze out of Venezuelan gasoline if we were to discriminate against them, in effect, by not treating them equally to domestic companies. That's what we're worrying about here.

Senator LIEBERMAN. Okay, I appreciate that answer, and obviously, as the data allows, I would be very interested in having more detailed comparisons as they become available. Under the agreement between U.S. and Venezuelan governments, I'm wondering if you could tell us what you think the impact would be on the northeastern States that adopted California car emissions standards prior to 1998.

I know that EPA has taken the position that the northeastern States did not need to adopt the California fuel standards in order to adopt the California car emission standards, and I wonder if that position would change in any way as a result of the gasoline that could be used in the northeast under this agreement?

Ms. NICHOLS. Well, the gasoline that will be available, if the agreement should result in a final rulemaking, would be the same as what was available in 1990, so there would be no increase in the sulfur content of the gasoline according to the information that has been furnished us, because of the configurations of their refineries that they are currently making. By 1995, there will be a substantial reduction in the sulfur and olefin content of their gasoline. And because of that, we think that there is absolutely no danger of any adverse impact, either on the catalysts or on the diagnostic systems that will be used for the California lev cars.

Senator LIEBERMAN. That's a very important answer. Let me just see if I can take it one step further, final question, which is whether you think the auto makers have any arguments, legal or factual, that the gasoline allowed under the agreement would have any different impact on cars produced with California emissions standards than would the reformulated gasoline allowed under the final rule?

Ms. NICHOLS. The argument that the auto companies made about the dependence of the California standards on the quality of gasoline is one that EPA has rejected, and I believe the Court of Appeals in New York has also now rejected. We don't believe that there is any differential effect as a result of the baseline issue being adjusted one way or the other under the reformulated rule.

Senator LIEBERMAN. Okay, so the answer to my question, the auto makers may have an argument but you don't accept it?

Ms. NICHOLS. No, I don't accept it, and I don't think that they can make a case that it's any different than the current pool.

Senator LIEBERMAN. Thank you very much.

Thank you, Mr. Chairman.

Senator BAUCUS. Thank you very much, Senator.

Ms. Nichols, turning back to Venezuelan gasoline in the northeast, is it true that EPA concluded that treating Venezuela the same as domestic refiners would result in a 14 percent increase above the U.S. refiners average in nitrous oxide emissions in the northeast? That's the question. Is that accurate? Did EPA reach that conclusion?

Ms. NICHOLS. The difference be—yes. Yes, EPA reached the conclusion that there is a 14 percent difference——

Senator BAUCUS. Increase.

Ms. NICHOLS [continuing]. In NO_X emissions, yes, between the baseline and the, Federal baseline and the independent, individual baseline that Venezuela would be able to establish.

Senator BAUCUS. Just to clear up a point that you made, in response to Senator Wofford, you said that EPA has concluded, because after you checked with certain people somewhere, apparently quite recently, that there is only a 0.18 percent increase in NO_X as a consequence of this in the northeast. Is that what you said?

Ms. NICHOLS. The differential NO_X emissions, based on multiplying the amount of gasoline that we believe Venezuela sells, their portion of the market in the northeast, by that differential, results in an increase of NO_X emissions total which amounts to about 0.08 percent of all the NO_X emissions, the NO_X inventory, during the summer ozone season in the northeast United States. And so it was that figure that I was then saying to Senator Wofford, if you try to apply that number of tons, which amounts to a total of 667 tons, and try to put that into the ozone models that we use, the urban air shed models that we use——

Senator BAUCUS. I'm trying to separate out two different points here. One is, currently how dirty, in the vernacular, is Venezuelan gasoline, if created the same as domestic refiners, and second what new and different information are you subsequently coming up with and how did you come up with it?

Referring to the first point, according to the inter-agency memo of March 14th of this year, "The quality of Venezuela's 1990 gasoline," this was an EPA, I think, written, inter-agency memorandum, "The quality of Venezuela's 1990 gasoline that was imported into the United States was dirtier than 1990 U.S. average gasoline, so that RFG produced to this baseline resulted in adverse air quality impacts relative to the U.S. average gasoline." And it goes on to say all the reasons why, and basically it's a 13.9 percent greater NO_X emissions, etc.

This is the only documentation we have, and all the documents state within EPA that the gasoline would be dirtier, and leads to a very strong conclusion that this is bad stuff. We shouldn't have this in the northeast. It's a 14 percent increase, for example, in nitrous oxides.

You answered Senator Wofford basically that it's not that big a deal overall, because it only results in 0.08 increase in NO_X overall in the northeast. My question is, when did you reach that conclusion? For two years, EPA's study of this issue and all documents written by EPA and other agencies has the opposite conclusion.

There's a significant problem here, and that's the reason why the December 15th rule was written.

What's the origin of your latest statement, given just about 15 minutes ago? Is there any documentation anywhere to support that, and if so, when was that document written? Was it written just recently or was it written any time relevant to the decision issued with the December 15 rule, even though EPA has been studying this for two years?

Ms. NICHOLS. Well, there are a couple of different points you've made that I would like to address. I guess the first is, the issue of what do you mean by the word "dirtier." And we certainly use that term in various ways. We've used other terms that are relative or adjectives that characterize the quality of gasoline. As I've said before, the Venezuelan gasoline is dirtier with respect to the ingredients that will cause NO_X emissions.

Senator BAUCUS. That's correct.

Ms. NICHOLS. What we are attempting to do here is achieve a pool of reformulated gasoline in the ozone areas that need this gasoline that meets the requirements of the Clean Air Act, that is 15 percent reductions in VOCs and toxics, and no increase in NO_X over baseline. And the issue that we've been trying to focus on here as we've evolved in our thinking about this issue is do we have an adequate justification for discriminating against one category of refiners, that is foreign refiners against domestic refiners.

Senator BAUCUS. We're going to get to that issue a little later. I'm just focusing on whether this is cleaner or dirtier.

Ms. NICHOLS. Yes, but——

Senator BAUCUS. We'll get to the discrimination point a little later on.

Ms. NICHOLS. But we have to, I think, think about this issue in addressing what EPA goes through in developing a rule, which is, how do we create a rule which achieves our objectives, which are to meet the statutory design criteria, to meet the maximum environmental benefits and to do so in a way which we can administer in a fair, equitable manner over the pool of people that we have to regulate.

And in looking at the issue of the Venezuelans throughout, we have been focusing on the question of the documentation and whether there was a legitimate differential between Venezuelan gasoline quality and other domestic gasoline that would justify not permitting them to use the individual baseline that all domestic companies can use.

As you've correctly stated, Venezuelan gasoline is dirtier than the average level of gasoline in the United States with respect to NO_X. That means roughly half is as dirty or dirtier, half is going to be cleaner. So from our point of view, the major question that we had to look at was, what was the quality of the data that backed those statements up. And throughout the period, up until the final rule was promulgated in December and afterwards, Venezuela was submitting data to us to try to substantiate what those numbers were.

Senator BAUCUS. And based upon that data, EPA reached its final rule December 15th——

Ms. NICHOLS. Yes.

Senator BAUCUS [continuing]. Which stated that foreign refiners had to meet the 1990 baseline.

Ms. NICHOLS. Yes.

Senator BAUCUS. Because EPA concluded that otherwise, air would be too much dirtier, and that would not be fair and appropriate to the administration of the Act, isn't that basically correct?

Ms. NICHOLS. And at the time that we promulgated the rule, we specifically indicated in public that we were still examining the data that Venezuela had submitted and would be holding further discussions with Venezuela with respect to their request to be treated equally with domestic refiners. We then proceeded to do that, staff had more time after they came to the final resolution of getting that rule out. It was under a court-ordered deadline with tremendous pressure.

We were dealing with issues such as the NO_X reductions, which all gasoline is going to achieve under phase two of this rule, as well as with the issue about ethanol and renewable fuels in the final rule, and so we shut that issue down, but we indicated that we would keep talking to Venezuela and we did that.

Senator BAUCUS. And as a consequence, held a December 14 meeting in the White House. Here's my concern. EPA, I think correctly, was saying no to Venezuela's entreaties; because otherwise, the air in the northeast would be significantly dirtier, and it would be unfair to residents living in the northeast. The rule was issued December 15th, after two years of negotiations, all with various concerns.

One day earlier, on December 14th, there's a meeting at the White House. Essentially the word was given, EPA has the Venezuelan oil minister visit the White House, and others visit the White House, to "reconsider" and to think about this some more. And that is the reason for the words issued by EPA on either December 15th or the next day, sort of reconsidering this because of White House pressure. That's the real concern here.

That is why, on December 15 or 16 or whatever day it was, those words were added, "We're going to reconsider," even though that was the final rule, December 15th, even though for the preceding two years, at least, EPA, State Department and all concerned officials properly have been listening to various entreaties by various interest groups and reached the final conclusion on December 15. My concern is what's happened out of the process, out of the rulemaking, behind closed doors, in a very inappropriate way. That's my major concern.

Ms. NICHOLS. Senator Baucus, may I respond to that, please? I think it's important that I say for the record that my staff had made recommendations to me prior to December 14th that the baseline issue be resolved in Venezuela's favor. Those staff people were present at the December 14th meeting that you refer to that took place in the White House.

I think that it is unfair to their integrity and to their competence to imply that they changed their position as a result of political pressure being brought to bear. That is not the case, and I don't believe there is anything in the record that supports that.

Senator BAUCUS. Here's the concern, frankly. What do I have to go on? Essentially what I have to go on is the document in the record. Everything in the record states what I've been saying.

Now, someone on your staff may have come to somebody and made the statement, but there's no documentation of that. There's none. There's no documentation of evidence contrary or of statements to the contrary. That's what I have to go on, is the record, this document.

All relevant documents we've asked EPA and other agencies to provide; we have given EPA an opportunity to provide whatever documents it wants to provide. The documents that EPA and other agencies have provided to us, leads to the conclusion that EPA was properly doing its job up through December 15th, then, the White House meetings of December 14th and March 14th, essentially had a consequence of, the White House giving the direction to EPA to listen to Venezuela, to do Venezuela a favor, figure out a way to do Venezuela a favor which has this adverse public health consequence on Americans.

And it's particularly disturbing to me because of two reasons. One, it's raising the nitrous oxide levels in the northeast, consequently, citizens of the northeast, if they don't meet their nonattainment goals under the Act, under their SIPS, they are going to be under greater pressure to take other actions to reduce levels of appropriate contaminants, whereas Venezuela gets a big break. That's one big concern I have.

The other big concern I have, is the process. This committee was never informed of the potential change, no one in the Congress ever was. In fact, as you well know, there is a State Department cable to Venezuela, from the U.S. ambassador to Venezuela, saying "Keep this a secret, this change, don't tell Congress about it until we have an opportunity to say when," and so forth.

So all of the evidence, all of the documents, unfortunately, lead to a very, very disturbing set of conclusions. Now, it may be that internally, there were these private conversations in the EPA that are not being mentioned, but I'm asking EPA to provide the documents or records of those kinds of discussions.

Ms. NICHOLS. Senator, I think if you would refer back to documents in the record that were provided to you back in September of 1993 relating to the initial agreement as well as draft rules that were in the record October and November of 1993, you would see that there were discussions underway within EPA with respect to this. The interagency process that you seem to find a sinister one we think is a normal process for EPA to engage in when we're developing rules that have impact on other agencies' interests as well.

And I would just like to reiterate that the proposal that is out there is subject to public comment, public hearing, we're specifically seeking environmental information about consequences, and I can assure you that we will not go forward with a final rule unless we're satisfied with respect to the environmental consequences.

Senator BAUCUS. There is documentation of early discussions, that is correct. But there is no documentation of EPA personnel recommendation to accept Venezuela's proposal. That's the point.

Mr. SHAPIRO. Senator, if I could just add for a second, I don't think we're quite limited to the documents that you've described, although obviously those are the most important and your staff and you have gone over them more than anyone else.

But our written testimony from USTR and my testimony here at this point would note that we felt, based on interagency discussions, that in the fall of 1993, EPA appeared to be close to reaching the conclusion that Venezuela's concerns could be accommodated while complying with the Clean Air Act goals for reformulated gas.

I raise that, Senator, only to say that this ongoing process which went on more than a year and a half, perhaps as many as two years, there were many times in that process that staff at USTR who were consulted about the GATT issues felt, and they felt in the fall of 1993, that EPA appeared to be close to the conclusion that Venezuela's concerns could be accommodated. I say that in support of Ms. Nichols' comment, because I do think it's an important thing. This was obviously a very difficult and complex issue.

Senator BAUCUS. Sir, do you have documentation of that?

Mr. SHAPIRO. I have documentation which I gave to the committee, a December 8 memo that we sent to Ambassador Kantor, indicating at that time that EPA had now, had decided at this point that they were going to issue the December 15 rule. And the suggestion in the document is that that came to something of a surprise to us, given what had gone on before.

So I think that basically, EPA was wrestling with a very difficult problem and I simply wanted to respond to the point that I don't believe that the December 14 meeting, and as you know, I was not in the country at the time, but I don't believe from what I've been able to ascertain, that that injected a new issue or constituted a new position.

Senator BAUCUS. Well, we'll go back to the record. The record, I think, is very important.

Senator Lieberman has questions.

Senator LIEBERMAN. Thanks, Mr. Chairman, and I appreciate the seriousness of your questioning here, particularly as a Senator from the northeast from whence you do not originate. I appreciate that.

I want to ask a final question which follows on yours, Mr. Chairman, and that is, another element of what's changed since EPA issued the final rule, and this goes to what I think is, again I'm about to misuse the word baseline here, but a fundamental question of whether you've got in place a good system for verification, certification, and enforcement.

So, my question is, whether the system, and that is with respect to the Venezuelan data, whether the system that EPA has in place for verification, certification, and enforcement set forth in the proposed rule is different from the one EPA previously had considered.

Ms. NICHOLS. Yes, Senator Lieberman. The proposal sets forth a series of tests which, if taken together, we think would adequately assure our ability to enforce. And those consist of, first of all, a requirement that each refiner, regardless of where they're located, submit a petition in writing, that it be audited by an independent auditor, certified and approved by EPA, that the refinery be subject to enforcement audits at the site of the refinery, and that EPA would not approve the baseline unless it were satisfied that there was certainty about the data.

With respect to them matching the gasoline after it leaves the refinery with what's introduced into the marketplace, there will be enforcement audits at the point of entry as well as at the refinery, to make sure that the gasoline quality matches up. This is something that's never been done before, but under our proposal, this would be required.

We would require an independent CPA audit to confirm that the gasoline that was loaded onto a particular ship was from a particular refinery that had previously been certified, and then EPA itself would do enforcement audits to confirm that. In addition to that, we would require any foreign country that was petitioning to use an independent baseline to grant immediate and full access to EPA for any inspections and audits that we chose to make on the foreign country's soil. This is obviously something that they would have to agree to, but as part of the petition process, that would be, in order to accept the petition, that would be something that we would require.

Given all of those protections——

Senator LIEBERMAN. And those are all changes from the earlier final rule?

Ms. NICHOLS. We had not contemplated doing any such thing with foreign refiners in the final rule. We were simply, and this is part of the discussion and the thinking process that was going on within EPA, in terms of how can we be comfortable with foreign gasoline and foreign refineries. These are the types of protections that we have come up with that we think would make us comfortable with a foreign country having a separate baseline. But again, this is something that we are taking comment on, and I expect that we will receive additional suggestions or concerns that will be raised that we will want to address during the comment process.

Senator LIEBERMAN. So you effectively overcame the concerns that were expressed in the preamble to your original final rule as what you described as, and made a pretty strong case for, the technical infeasibility of applying individual baseline for foreign importers?

Ms. NICHOLS. Yes. I think really what happened is that there was an ongoing assessment process taking place within EPA and between EPA and the representatives of PDVSA, the Venezuelan oil company, with respect to Venezuela's data, how we would get the data, what we would do with the data, and that sometime in February, in the February to March time frame, EPA staff became convinced that they could, with a carefully crafted rule, achieve the same level of comfort with respect to a foreign company's baseline as they would be able to with a domestic. But again, this is something that we will need to take more comment on.

Senator LIEBERMAN. Okay, because that was clearly a central factor in the original idea of treating the two sources of gasoline differently and bottom line, needless to say, that the environmental benefits of the reformulated program will depend on EPA's receiving accurate and verifiable reports from the refineries, the entities that you're regulating. So you're testifying today that you think that you've got systems that now will allow you to do that and overcome your initial hesitancy, which was at least one of the bases for treating Venezuelan oil differently than domestically refined oil?

Ms. NICHOLS. Yes, absolutely. The concern about the ability to monitor and enforce was the principal concern for distinguishing between the domestic companies that EPA has dealt with in the past and the foreign companies. But again, this is a new area for EPA. The use of this complex model, which all companies are going to be using in 1998, is something that has never been done before, and really it was only the Clean Air Act Amendments of 1990 that for the first time put EPA in the business of going as deeply into the refining process and all the chemical components of gasoline as we are now. So this is new territory.

Senator LIEBERMAN. Okay, I thank you.

I'll have some other questions that I'll submit for the record, and I appreciate your testimony. Again, I want to thank the Chairman, Senator Baucus, for his leadership here. This really does matter, it is at the heart of whether we're going to have cleaner air in the northeast, and particularly Connecticut. So the committee, I'm sure, under his leadership, will continue to follow these deliberations very closely.

Ms. NICHOLS. We appreciate your concern and your support for the Clean Air Act.

Senator BAUCUS. Thank you very much, Senator.

Ms. Nichols, what's changed? You say your staff's convinced that it can monitor, whereas prior to December 15th, the staff was not convinced. In fact, it was convinced just the opposite, that it could not adequately protect health. And I'm sure that PDVSA made these same suggestions to the EPA staff prior to December 15th. I can't for the life of me believe that after two years of negotiations, just suddenly lo and behold, out of the clean air, so to speak——

Ms. NICHOLS. Out of the less than clean air.

Senator BAUCUS [continuing]. Suddenly they found a way to do all this. What's changed, post-December 15, 1993 compared with pre-December 15, 1993? I assume these same suggestions were kicked around and worked on and pursued, certainly in the various companies, I'm sure these companies are banging on your doors with all these ideas. They're aggressive about it. I don't think they just came up with it, Venezuela just suddenly thought of this idea, or is that true? What's changed?

Ms. NICHOLS. In some ways there's more and in some ways there's less change there than meets the eye. First of all again, going back in the history of the development of this rule in the early stages, PDVSA had no reason to believe that EPA was planning to treat them any differently from any other oil company. It wasn't until September of 1993 that they became aware of the fact that EPA was proposing to lump them into a statutory baseline pool rather than allowing them to use their own independent baseline. Because up until that point, EPA's position had been to treat all refiners equally, regardless of where they were located.

So at that point, you then had some meetings and some discussions. EPA was working on this issue while working on a number of other parts of the rule that were deemed by them and frankly by me to be more fundamental to the overall environmental protectiveness of the rule. December comes along, EPA technical staff are feeling, on balance, I would say, more or less strongly, that they probably could accommodate Venezuela's concerns.

But I, in my role as a policy person making recommendations to the Administrator, felt that there was still enough uncertainty, particularly with respect to the enforceability against the foreign refiners, that I did not recommend that approach. And we went forward with the rule creating the two-tier system, one for foreign and one for domestic.

But based on Venezuela's very strong protestations, the fact that the staff were still concerned about the issue, as were other agencies, we indicated to them that we would keep the issue open. We actually explored internally the question of whether there was a way we could put out a final rule and leave this baseline question open so that we wouldn't have to go back through a future rulemaking in order to address the baseline issue.

Senator BAUCUS. But my basic question is, what's changed? What's different?

Ms. NICHOLS. Well, I'm really trying to say that I think what's changed, the change is the evolution or the crystallizing, if you will, based on some additional data that was furnished very late in the process, perhaps in early December by the Venezuelan government, as well as meetings post-final rule with PDVSA, with respect to their willingness to submit to U.S. unannounced inspections, etc.——

Senator BAUCUS. Is there any documentation to show that there is anything, that there is something new?

Ms. NICHOLS. Only notes of meetings. I don't think it's a matter of new data per se, as evaluation of data was there.

Senator BAUCUS. Again, my concern is, based upon the documents. It just looks like nothing's changed.

Ms. NICHOLS. I was handed a note to correct a misstatement that I made about a date, just so I don't have to go back and do it later. The differential baseline idea was introduced in 1992, April of 1992, not in 1993. I just wanted to correct myself on that.

Senator BAUCUS. This question is maybe slightly repetitious, but I just want to clarify for the record here, did EPA also conclude that each vehicle using Venezuelan reformulated gasoline in a major northeastern city would emit as much as 12 percent more nitrous oxide if Venezuela was allowed to use its 1990 baseline average?

Ms. NICHOLS. That's the same differential number that you used before, and we just applied it to—because the NO_X is emitted from the auto, we refer to it that way.

Senator BAUCUS. Right. And did EPA also conclude that Venezuela was treated the same as U.S. refineries, and be allowed to sell gasoline in this country with twice the amount of sulfur and olefins than U.S. gasoline?

Ms. NICHOLS. The number that I believe you're referring to is from a table that we furnished to the committee, which indicates again that this is directly related to the NO_X issue, that the sulfur content of the Venezuelan gasoline, if they use their own 1990 baseline, is roughly, but not quite, twice the average pool of Federal reformulated gasoline.

Senator BAUCUS. Yes, I'm reading from EPA's interagency document that basically says, "Venezuela's 1990 gasoline, at 644 parts per million sulfured, 22 percent olefins as compared to 1990 U.S. averages for those parameters of 338," which is about half of 644, "and 10.6 percent olefins," which is half of the others in this case.

Ms. NICHOLS. Yes, so again, half of the gasoline in the U.S. is cleaner than that, and half is the same or dirtier.

Senator BAUCUS. Under the Clean Air Act, are sulfur and olefins considered public health risks?

Ms. NICHOLS. Olefins aren't regulated per se, sulfur is regulated separately. In this context, our concern about sulfur at these levels is with respect to its impact on NO_X formation.

Senator BAUCUS. And just to be clear, is it EPA's conclusion that Venezuelan gasoline is sold primarily in Mid-Atlantic states and northeastern States?

Ms. NICHOLS. That's the information that we have available to us, that it's marketed primarily in the northeast.

Senator BAUCUS. Is it true that those areas of the country have air quality considered to be below U.S. public health standards?

Ms. NICHOLS. I would say throughout most of the region the air quality is worse than the Federal health standards, yes.

Senator BAUCUS. According to a December 23, 1992 internal memorandum from the EPA Office of General Counsel:

> EPA believes it would be unable to obtain access to each foreign refiner's records, either to conduct such an audit itself or to verify the accuracy of audits conducted by others.

It was sent to the Office of Air Radiation. Are you aware of that memorandum?

Ms. NICHOLS. Yes.

[See Appendix 2, p. 98, for text of memorandum.]

Senator BAUCUS. Do you agree with it? It's from the Office of General Counsel.

Ms. NICHOLS. I think at the time the memorandum was sent, that was the best information that the Office of General Counsel had available to it.

Senator BAUCUS. The memorandum further states that foreign refiners would have an economic incentive to provide dirtier air to its importers, they could set a cheaper by dirtier baseline. That's what the memorandum says. But if refineries were not permitted to set their own baseline, that could not happen. Are you familiar with that argument?

Ms. NICHOLS. Yes, I think that refers to the conventional gasoline issue and the anti-dumping provision argument. But I'm familiar with the overall thrust of the memo.

Senator BAUCUS. PDVSA has five refineries, each of them has different gasoline products, some cleaner, others dirtier, is that correct?

Ms. NICHOLS. I assume so.

Senator BAUCUS. Would it be to PDVSA's economic advantage if it could set its own baseline, and use dirtier gasoline products than they're averaging?

Ms. NICHOLS. Clearly Venezuela prefers to use its own baseline rather than to use the average baseline provided under the December rule, because they will then have to do only the same amount of reformulating that they had planned to do if they were being treated the same as domestic refiners.

Senator BAUCUS. According to an internal Office of Air and Radiation Memorandum dated December 12, 1992, foreign refiners could gain the system by using data from years 1991 and after to create a baseline average. Using this data, any importer could use its dirtiest gasoline to create a false baseline that had higher pollutant contents.

Your attorney concluded:

> The individually calculated baseline would be less stringent than the importer's actual capacity to market clean gasoline. Directionally, emissions would rise and the U.S. environment would suffer, and the importer would have an unjust competitive advantage against other importers and domestic refiners.

Do you agree with that conclusion?

Ms. NICHOLS. The point that's being made there, I believe, Senator, is that there was a concern about this issue of people choosing to produce dirtier gasoline if they were allowed to use their own baseline for conventional purposes, which is why our proposal of April 21st does not allow them to do that. The April 21st proposal only deals with the baseline for the reformulated gasoline and caps it at the 1990 levels in order to address that concern.

Senator BAUCUS. And I'm just reading from, EPA's own internal memorandum. That's just what——

Ms. NICHOLS. I'm just telling you how I interpret the memorandum that I received. Our Office of General Counsel reviewed the proposal that was put out on April 21st as they do all of our proposals and have approved of it.

Senator BAUCUS. I haven't had a chance to review all that. All I know is what we've had a chance to review, based upon the 1995 rule. Your own air office also concluded that foreign refiners could use an importer with an artificially high baseline, ship dirtier gasoline to the United States. According to the Air office:

> A foreign refiner would realize a clear competitive advantage and contribute to environmental degradation.
>
> Accordingly, the proposed distinction between importers and domestic refiners is justified based upon EPA's interest in maintaining a level playing field for the regulated community, the goal of the Clean Air Act to maximize environmental benefits associated with the reformulated fuels program and the overarching public health goals sought to be protected by the Act.

I take it you now disagree with that statement?

Ms. NICHOLS. I believe that as part of the conversations that I've indicated were going on within the agency, our Office of General Counsel was aware of the same data that the Air office was aware of with respect to what was going on in the refineries and what was being furnished by Venezuela and what the enforcement possibilities might be, and therefore that they agreed with us in coming to the conclusion that it would be appropriate to propose to allow Venezuela to petition for its own baseline.

Senator BAUCUS. I just quoted from the Air office. Now let me quote the General Counsel of the EPA, which concluded:

> Serious legal and practical problems raised by enforcing access and verification of foreign refiners records produced a strong likelihood that the importers could gain the system. This would provide unfair economic advantage.

Are you aware of the General Counsel's concern, in addition to the Air office?

Ms. NICHOLS. Yes.

Senator BAUCUS. The memorandum also states:

> * * * fungibility of gasoline might make it impossible to know with any degree of accuracy the identity of the refiners or the mixture of gasolines in an imported batch. In addition, this could also make it relatively easy to disguise the true refiner's identity.

This apparently was another among the many reasons EPA adopted the December 15th rule in a way that Venezuela did not particularly care for. I assume that's the basis for it. From what I've been reading, the General Counsel's office and your office, is the basis, one of the bases, for the December 15th rule.

Ms. NICHOLS. Yes, that's correct.

Senator BAUCUS. On June 23, 1993, an attorney in EPA's Office of Air and Radiation expressed similar concerns. He wrote that despite Venezuelan claims that it would provide guarantees that EPA would be able to track its gasoline from refinery gate to point of import, that is a claim that many agencies strongly disputed.

This attorney wrote that despite Venezuelan claims that it could provide guarantees that EPA would be able to track its gasoline from refinery gate to point of import, "U.S. Customs states that under normal foreign gasoline distribution procedure, it is virtually impossible to track." Were you aware that the Office of Oil Imports at U.S. Customs had informed EPA that it was impossible to track Venezuelan gasoline?

[See Appendix 3, p. 104, for text of memorandum.]

Ms. NICHOLS. I am aware of that. That's why the December 15th proposal—rule—looks the way it does. And that's why the proposal deals with that issue through mandatory audit trail that I just described in my reply to Senator Lieberman.

Senator BAUCUS. The June 23 memorandum also notes that domestic refiners comply with EPA rules because of potential criminal penalties. The memorandum concludes that "obtaining criminal sanctions against foreign nationals appears to be infeasible." Has EPA in fact ever successfully sought criminal penalties against foreign nationals?

Ms. NICHOLS. I don't know the answer to whether EPA has ever sought a criminal penalty against a foreign national. There aren't any criminal sanctions specifically under the fuels portions of the Clean Air Act that are provided for. If there were to be a crime, it would be submitting of a false report.

It's my understanding that if EPA obtained evidence that a false report had been intentionally submitted to EPA, we would refer the matter to the Department of Justice, which is what we do regardless of whether the company was domestic or foreign. This is an issue that we are seeking public comment on as part of the proposal that has just been put out.

But in addition to any criminal penalties, there are other sanctions that are provided for in the rule, which would be both limits on future imports from any country that did violate either the reporting of the fuel quality requirements, and also civil penalties which would be assessed against the importer, which is a company doing business in the United States.

So those penalties would be assessed at the point of importation and would be effective in that respect.

Senator BAUCUS. I mentioned Customs earlier and some of the other agencies' concerns. Did you consult with Customs before issuing this rule yesterday?

Ms. NICHOLS. I didn't personally consult with Customs authorities.

Senator BAUCUS. Did EPA?

Ms. NICHOLS. My understanding is that EPA evaluated the issue that they raised in the context of what is normal and came up with a proposal that they thought dealt with was needed in addition to that.

Senator BAUCUS. In your own records, you know Customs has a very strong involvement in this investigation. I just quoted them to you.

Ms. NICHOLS. I've read the documents, Senator, I think they've accurately described what normally goes on. EPA made a proposal for how to supplement that with an additional enforcement procedure. We'll be delighted to receive comment from anyone, including the Customs people, as to whether they think that's workable or not.

Senator BAUCUS. The Clean Air Act Amendments of 1990 also prohibit refiners who remove toxic properties during the reformulated gasoline process from dumping those ingredients into conventional gasoline sold in areas of the country not covered by the RFG requirements.

According to one of the Air programs internal responses to PDVSA's arguments, foreign refiners have the incentive to claim that their individual baseline is dirtier than the statutory standard. Their office specifically stated, "The refiner might then be able to dump dirty conventional gasoline into the United States, to deprive the United States of the intended environmental benefits of the statutory baseline standard."

Were you aware that EPA was concerned that Venezuela would be able to get away with violating the Act by dumping this?

Ms. NICHOLS. Yes, Senator. As I indicated, that's why the recent proposal deals with that matter through a cap on the amount of gasoline that would be allowed under the separate baseline, is precisely to deal with that provision. And also, the proposal does not cover conventional gasoline. There is no separate baseline permitted or contemplated under the proposal.

Senator BAUCUS. You say there's a cap?

Ms. NICHOLS. The cap would be on the amount of reformulated gasoline that could be imported under a separate baseline. But in addition to that——

Senator BAUCUS. And what—sorry.

Ms. NICHOLS. I was just about to then go ahead and talk about the conventional gasoline, just to make it clear that the conventional gasoline is not subject to the separate baseline at all.

Senator BAUCUS. And what's the point of the cap?

Ms. NICHOLS. The point of the cap is to prevent any increase in the amount of gasoline that would be sold under an independent baseline. It addresses EPA's concern that there might be an incentive for Venezuela or an ability for Venezuela to export additional quantities of gasoline into the United States. This is frankly a question that is attempting to deal with equity concerns. We're trying to keep a level playing field here.

Senator BAUCUS. I'll get to that later on.

Now I would like to turn to another subject. During these several years of analysis and negotiations leading up to the issuance of a final RFG rule, was EPA aware that Venezuela had been arguing that the rule would be discriminatory and in violation of GATT?

Ms. NICHOLS. I'm certainly aware that the issue of GATT being a factor, or of our proposal being violative of GATT was raised by Venezuela prior to December.

Senator BAUCUS. Were EPA staff in contact with the office of USTR prior to the issuance of the final December 15th rule?

Ms. NICHOLS. Yes, they were.

Senator BAUCUS. Among the documents provided to the committee by EPA is a November 12, 1993 paper outlining foreign refiner issues prepared by Dick Wilson of the Air program. The paper states that the USTR is neutral on the issue, those are quotes, of Venezuela's GATT argument. Was Mr. Wilson in a position to know USTR's position with respect to Venezuela's claim?

Ms. NICHOLS. I'm assuming that Mr. Wilson was reporting based on conversations that he had with USTR.

Senator BAUCUS. Okay. And that's again according to the December 12th memo of last year.

Mr. Wilson also wrote that USTR classified Venezuela's case as a "colorful GATT claim by PDVSA, but credible rebuttal through GATT exceptions, GATT should not drive policy decision." That's written by Mr. Wilson, I guess it's basically the same memo, December 12, 1993. Is that in fact EPA's position that GATT should not drive regulatory decisions?

Ms. NICHOLS. Yes, it is. I think what Mr. Wilson's memo indicated to me, and what I believe he also said in our oral conversations and briefings on this matter was that USTR was in essence deferring to EPA with respect to the merits of the case, that it was up to EPA to develop the information that would justify the environmental claim for why we should be treating Venezuela or other importers separately.

Senator BAUCUS. Isn't there a pretty good-sized international office, in EPA, to assess these kinds of questions?

Ms. NICHOLS. We have an office of international affairs that deals with environmental matters on the international scene, and we also have a small group of attorneys who specialize in international environmental legal issues. I don't think we have any, I wouldn't say that EPA holds itself out as having expertise on trade matters, when there's some U.S. rule were represented, being challenged, and the GATT were represented by USTR.

Senator BAUCUS. As I stated earlier, Mr. Wilson also states in his memo that the USTR itself is neutral on the issue of Venezuela's GATT arguments.

Mr. SHAPIRO. Mr. Chairman, would it be——

Senator BAUCUS. If I might just look at this for a second.

Mr. SHAPIRO. No, I was just curious if it would be helpful if I chimed in, otherwise I'm happy to wait.

Senator BAUCUS. Go ahead and chime.

Mr. SHAPIRO. Well, from the standpoint of USTR, I'd like to underscore that first of all, throughout this, we believe that the Clean Air Act requirements were of overriding importance, and in our conversations with EPA, we always reiterated that. We don't think that the GATT issues should drive U.S. environmental policy.

And I think no one, probably, with the exception of you, no one has spent more time than Ambassador Kantor in the effort to try to harmonize environmental objectives and trade objectives. We were prepared and are prepared to vigorously defend the rule if it is challenged if EPA concluded that differential treatment was needed to accomplish the Clean Air Act requirements.

At the same time, if there was a way of doing it that was, that accomplished the Clean Air Act requirements and was GATT consistent, that's obviously our preference. And that was the nature of the conversations that went on at least since December of 1992 when EPA first mentioned this issue to us. And I think that basically that is, has been and remains our position.

Senator BAUCUS. Basically that gets to my next question.

Ms. Nichols, there is another document where Jonathan Martel of EPA writes:

> GATT provisions do not require the approach proposed by PDVSA. The GATT exceptions for measures necessary to protect human, animal and plant life were necessary to secure compliance with laws or regulations that are applicable in this case.

Do you know why EPA believed the rule qualified under public health exceptions? Essentially, Mr. Martel is reiterating EPA's position that there's nothing in the GATT where such consequence would override EPA's concern for public health, that's basically your point too?

Ms. NICHOLS. It's consistently the advice that we've been given by our own international attorneys and by USTR.

Mr. SHAPIRO. Mr. Chairman, in thinking about what I just said, I want to add two things, or three things. Number one, while the environmental concern was the overriding one throughout, I don't believe it's accurate the way Mr. Wilson characterized our view of the GATT case. We have regarded this as a serious GATT issue, one that we're perfectly happy to take on, but a serious GATT issue.

Senator BAUCUS. But not so serious as to warrant anything that approaches a vigorous complaint or challenge by USTR that the EPA should not proceed? It didn't rise to that level?

Mr. SHAPIRO. Our concern throughout was that EPA understand the GATT issues and we would go with their determination of what the Clean Air Act required. There is a problem here, or an issue, that the Article 20 question is rather closely tied to what EPA concludes about the Clean Air Act issue.

Specifically, if you try to go under Article 20 and make the argument that measure is justified or discrimination is justified on the basis of health, the difficulty you run into is whether it is necessary. In other words, is there another way to deal, is there a way to deal with this issue that doesn't require discrimination.

So in a sense the GATT case is basically a little bit tied to the question Ms. Nichols was addressing.

Senator BAUCUS. I appreciate that.

Among the EPA documents is a draft cable from USTR, through our embassy in Caracas. The cable was sent to EPA personnel for their comments, and the cable, which is dated December 19, 1993, states:

> We do not accept the government of Venezuela's contention that EPA's regulation of RFG is a test of our free trade credentials in a post-NAFTA environment. EPA has a lot to enforce and is trying to do so in the most effective manner. Just as the government of Venezuela adopts regulations and imposes standards on U.S. firms and U.S. imports, so too does the United States.

That's a USTR cable. I assume that USTR still supports that view?

Mr. SHAPIRO. Mr. Chairman, our view of this case has always been predicated on the justification that EPA could provide for having separate rules for foreign refiners. That draft cable was intended to provide our embassy with a more complete picture of the history of this situation, and we wanted to give the embassy talking points to respond to Venezuela, which was making the argument that our trade credentials were somehow in question at that point.

We were also preparing, if the December 15 rule went forward, we were preparing to defend it vigorously, as I've said. At the same time, the staff, as you are aware and the staff is aware and we've discussed the question of the fact that we had serious GATT concerns. So that was our position with respect to what the embassy would be saying.

Senator BAUCUS. I'm going to have more questions to ask, but I'm going to take about a five-minute break. The hearing is recessed for five minutes.

[Recess.]

Senator BAUCUS. The hearing will come back to order.

Ms. Nichols, I just want to make sure there's no misunderstanding here. Did you or people in EPA charged with making these decisions receive anything in writing that indicated to you that EPA was comfortable with approving the September compromise?

Ms. NICHOLS. I think the only document that lays out the September approach and suggests the pros and cons of doing that is post-December 15th. Prior to December 15th, my briefings and meetings with the staff people on this issue and those that the Administrator held were done in face to face communications and were not, we did not attempt to put those, as far as I know, in any written communication.

Senator BAUCUS. I read portions of many documents that state, very deep concerns of various personnel and the general counsel. I'm just curious if there are any written documents that state that EPA was comfortable approving the December compromise. I suppose there are pros and cons but, let me ask this question first, are there any documents that state the pros, and second, are there any documents that state EPA is comfortable with or agrees with——

Ms. NICHOLS. I think the closest thing to what you're asking for, Mr. Chairman, is a document which was furnished to the committee, it's dated draft 10/20/93 reformulated gasoline enforcement provisions, in which the staff prepared a document on the assumption that EPA would be going with a foreign refiner baseline that would be the same as the domestic refiner baseline, indicating, this is a document that clearly indicates that the staff was thinking that they might be going with a final rule that would treat foreign refiners and domestic refiners the same.

And as you can see from the strikeouts and added language, whoever prepared this document, I'm not sure individually, although I know which part of EPA it comes from, apparently felt at that time that they were prepared to move forward with a common approach.

Senator BAUCUS. Could you read a quote from that document that indicates that EPA is comfortable with approving the September compromise? Could you quote from portions of that document so stated?

Ms. NICHOLS. On page 102, it's not the 102d page of the document, but the page has 102 on the bottom of it, it says:

> Unless all the conditions on use of an individual foreign refinery baseline are met, are fully met, the importer may not use the individual foreign refinery baseline.

In addition, if EPA determines that any information previously supplied is incorrect, and it goes on to say in that case that the foreign refiner would have to recalculate its compliance posture. I think that indicates on its face that EPA is saying that they have now laid out in this preamble a procedure under which foreign refineries could use their baselines.

Senator BAUCUS. What document is that?

Ms. NICHOLS. It has on the cover page, "Draft 10/20/93 reformulated gasoline enforcement provisions preamble."

Senator BAUCUS. I don't have that copy.

Ms. NICHOLS. That was not used in the final, obviously.

Senator BAUCUS. I don't have that in front of me. Nevertheless, it uses the word "unless," but I don't want to quibble on that point. But it does not reach the conclusion or make a recommendation that EPA is comfortable or could well be comfortable with the September compromise, if I hear it right. It's basically saying a lot of ifs and unless and so forth. There's a lot of conditional phrases, not reaching any conclusion.

Would it be fair to say that——

Ms. NICHOLS. Excuse me, Mr. Chairman, perhaps I could just cite another sentence from the same document, because I'm just reviewing it myself, it's been a while.

On page 97 of that document, it says:

> After consideration of all comments on this issue, EPA has decided to implement an option for importers to use an individual baseline for gasoline produced by a foreign refinery.

Then goes on to describe how that would work. So again, this is a draft, it was not in fact taken as the final.

Senator BAUCUS. The final rule rejects that.

Ms. NICHOLS. Yes, that's correct. But this was prepared by EPA staff and submitted for possible use.

Senator BAUCUS. So the fact is, by November last year, EPA was well aware of one statement that reached some degree of a contrary conclusion and was rejected by EPA, and I would assume, because of all the other conclusions that I've read from other documents, written by other personnel——

Ms. NICHOLS. Obviously, each person could have his or her own precise recollection of at what point in time they made the decision to go in a particular direction. But I think in my own case it's fair to say that I was aware as of November or December that the staff in general favored giving Venezuela its own baseline, and that the decision not to go along with that recommendation was one that I took and advocated to the Administrator, despite the fact that the staff was leaning in the other direction, individual——

Senator BAUCUS. Not going into the degree to which the staff was leaning in the other direction, why did you personally conclude and recommend the December 15 rule?

Ms. NICHOLS. I made that recommendation, Senator, because I believed that in the overall context of the rule, where we were requiring very drastic reductions on the part of domestic companies, particularly in the 1998 time frame and going beyond what had been in the reg/neg with respect to controls on NO_X emissions that if there was an area where there was some question or gray area as to which way to go and we had a choice, I thought that for reasons of fairness to the U.S. companies I would lean on the side of favoring their position over that of Venezuela's.

It was, this was a close call, but it seemed to me that in the context of the rule we were doing enough things that would be seen as being punitive by the American petroleum companies that it was appropriate, if we had a choice, to lean in the direction of doing something that would favor their competitive position, vis-a-vis the Venezuelans.

Senator BAUCUS. But it would be fair to say that at the time the December 15 rule was issued, EPA had considered all of Venezuela's offers and comments and had rejected them?

Ms. NICHOLS. I think it's fair to say that the data were all there. I don't think there was additional data presented. I do think, though, that the analysis of that data by staff which emerged in an even stronger position on their part, did not come forward until after the December 15th final rulemaking.

Senator BAUCUS. In early December last year, the Venezuelan oil minister, future minister of finance, came to Washington, D.C. to visit officials at the White House, State Department, USTR, Treasury Department and other agencies.

On December 14th, as I mentioned earlier, the day prior to the issuance of the rule, the day before the rule was issued, the White House National Economic Council convened a meeting to discuss the Venezuelan RFG issue. According to USTR's internal account of the meeting, Ambassador Kantor supported issuance of the rule, and Ambassador Barshevsky, who represented the USTR, raised trade issues in discussion, but supported EPA's decision to issue the rule. Is that correct, Mr. Shapiro?

Mr. SHAPIRO. Mr. Chairman, that's consistent with our position. Ambassador Kantor's view was that we would support what the EPA administrator decided was needed to meet the Clean Air Act requirements.

Senator BAUCUS. Then the answer is yes? It's consistent?

Mr. SHAPIRO. As stated.

Senator BAUCUS. According to USTR's account of the meeting, the National Economic Council agreed to allow the rule to be issued, but also said EPA should continue to negotiate with Venezuela about the RFG rule. Is that accurate?

Yes, I see Mr. Shapiro nodding his head in the affirmative.

Mr. SHAPIRO. Yes, that is accurate.

Senator BAUCUS. Following the meeting, did EPA's negotiations with Venezuela pick up pace, compared to the level of discussions prior to that time?

Ms. NICHOLS. Assuming that question is addressed to me, I think the answer is yes, there were meetings initiated immediately after December 15th, and then a GATT challenge was filed, so there were consultations.

Senator BAUCUS. But essentially, in the period prior to December 15th, but for the early December visits of the Venezuelan oil minister and future minister of finance, there was not a lot of intensive activity for the preceding couple or three months on this issue, is that correct?

Ms. NICHOLS. There were several meetings at the staff level, and I was visited by the attorneys for PDVSA on December 1st. I didn't meet with the Venezuela oil minister or any other Venezuelan government officials.

Mr. SHAPIRO. Mr. Chairman, I think based on what Ms. Nichols has said and what our written testimony has said, we were of the view, and I think others were of the view that staff was inclining toward believing that the Venezuelan concerns could be accommodated. I think when activities picked up at the time that you're pointing to, it may have been that the decision was essentially going in a way that had not been expected.

Senator BAUCUS. Following the meeting I just referred to—do you have any documents to support that issue, Mr. Shapiro, that you just stated?

Mr. SHAPIRO. I think the documents that we have provided to the committee do tend to support that.

Senator BAUCUS. Which ones, I'm just curious, did you have in mind?

Mr. SHAPIRO. Well, there is one memo that was written around December 8th, which indicates, and which is sort of a confidential memo, but indicates, and the committee has it, a sense that the rule was coming out in a way that had earlier not been expected, just based on staff consultations. Because obviously, and I'm not suggesting that, Ms. Nichols and the Administrator can certainly make decisions, they have the responsibility and we were intending to support them, as Ambassador Kantor indicated.

All that I've been trying to suggest was that some of the activity in the December, in the range of the December 15 time frame, including the December 14 meeting, came together because the outcome had not been wholly anticipated.

Ms. NICHOLS. I think if I could just chime in from EPA's perspective, Senator. In the period between the beginning of December and the time that the final rule was actually issued, our time was being fully occupied with a number of other issues related to getting this rule put out in final, and I know you're aware of many of them.

And so we were really quite engaged with things that seemed more significant to us, and didn't have much time to deal with the Venezuelans. We had hoped that we could put this issue off. In the end we decided we had to make a final decision one way or the other. But after we had gotten the final rule out, our attention was then freed up to deal with the Venezuelan question.

Senator BAUCUS. Okay, Mr. Shapiro, I just want to clear up a misunderstanding here. You say there are documents that you're aware of, I think you mentioned a December 8th document, which supports your position. Did I understand you correctly to say that there were staff who did recommend accommodating Venezuela?

Mr. SHAPIRO. Mr. Chairman, there were discussions over a long period of time about whether the Clean Air requirements could be met, whether EPA would be comfortable meeting the Clean Air requirements and dealing with Venezuela's request. Staff at USTR, and I think because, as Ms. Nichols has said, staff at EPA were inclined to believe that those challenges could be reconciled.

Senator BAUCUS. In a way consistent with the December 15th rule?

Mr. SHAPIRO. No. No. What I'm saying is, we were under the impression in the fall of 1993, based on staff discussions, that EPA was moving toward a decision that would have given Venezuela its independent baseline and that the Clean Air requirements, they felt that the Clean Air requirements would not be sacrificed. At some point, and Ms. Nichols has referred to it, at some point, when the decision reached her, she concluded that that was not the way she wanted to go.

Senator BAUCUS. I'm asking the question, where is the documentation that supports your contention? You just implied that USTR staff concluded that the better approach would be, I assume because of the potential GATT issues, to accommodate Venezuela, that is to agree with Venezuela rather than not agree with Venezuela. Where is your documentation that supports that conclusion? Because all the documentation I have is to the contrary.

Mr. SHAPIRO. Well, Mr. Chairman, I think that the documentation that we've provided, including several memos——

Senator BAUCUS. Which one?

Mr. SHAPIRO. There are several memos, including December 8 and the March memos that go over this situation. All the documentation essentially supports what I've said, which is we were working with EPA to see if there was a way that the Clean Air Act requirements could be satisfied in a way that avoided the need for a GATT challenge. If it couldn't, we were prepared to vigorously defend. That's what the documents indicate, and that's what Ambassador Kantor's position was. But we were not looking to invite a challenge, if it was possible, to deal with this consistent with the Clean Air Act requirements.

Senator BAUCUS. Actually, Mr. Shapiro, when we get into the matter of classified documents that you've provided, it's inappropriate, to comment on them. I want to warn all of us not to take advantage of the fact that they are classified by either overstating or, I'm not suggesting you're doing this, but misrepresenting the conclusions in them. Because we've seen those documents, too, and based upon the evidence that we have, there is no documentation that supports the position that you're taking.

Mr. SHAPIRO. Well, Mr. Chairman, I wouldn't, I certainly don't want to take advantage of the classified nature of the documents.

Senator BAUCUS. Nor do I.

Mr. SHAPIRO. No, I know you don't. I don't think that I'm overstating or misrepresenting the position.

And in fact, the prepared statement that I brought for the record today summarizes exactly what our position is and has been, that the Clean Air objectives remain of overriding importance, that we were prepared to vigorously defend the GATT case, if EPA concluded that Venezuela had to be treated differently, but that if there was a solution consistent with the Clean Air Act requirements that would deal with Venezuela's concerns and would avoid a GATT challenge, we were very comfortable with that. We don't like to invite GATT challenges based on differential treatment, if, if there is no justification for it.

Senator BAUCUS. But still, the point is that the potential GATT problem had not risen to the level to exalt any sort of vigorous protest or challenge by the USTR. There was a colorable claim, but it wasn't at a level in the conclusion of USTR's judgment to warrant telling EPA, "Hey, back off." Isn't that correct, too?

Mr. SHAPIRO. Mr. Chairman, as I indicated when Mr. Wilson's statement was quoted before, it is not accurate to conclude that we thought that the claim was colorable. We thought there was a serious question but that it did not, when you say rise to the level of, Clean Air Act issue was overriding. The question of how serious the GATT challenge was depended on what justification EPA had for treating Venezuela differently.

Senator BAUCUS. Let's go back to see what you're referring to. OK.

Following the December 14th meeting, the day before issuance of the rule, and subsequent discussions with Venezuela, did EPA develop an options paper to present at another meeting at the White House to take place March 14th?

Ms. NICHOLS. Yes.

Senator BAUCUS. After Venezuela made it clear that they would initiate a GATT case, did EPA begin putting together information to support its previous position that the public health exemptions under GATT are applicable in this case?

Ms. NICHOLS. Yes. EPA staff were doing two things at the same time, they were preparing to defend the December 15th rule and they were also examining the Venezuelan position and documents and formulating this option.

Senator BAUCUS. In preparing the options paper, EPA solicited comments from USTR. On March 4th, 1994, the USTR attorney handling the matter sent comments to EPA. Referring to EPA's options paper, the attorney stated

> Previously we could not quantify the adverse air quality impact, but in this section, it is called significant. What's missing, as we have discussed several times before, is any assessment of the significance, technically or politically, of the increase in NO_X emissions between the final rule and option two.

Again, I'm quoting directly from a USTR document which goes on to say, "If we could even put a range and a relative size indicator on it, no matter how broad, it would be helpful. As it is, decision makers are being asked to choose between $450 million trade impact plus some general foreign policy concerns versus adverse," and there are a couple of exclamation points, "air quality consequences." EPA removed the word significant from its discussion of adverse health consequences as USTR suggested?

Ms. NICHOLS. Yes. I have the document and the drafts and the final.

Senator BAUCUS. So he did remove the word "significant"?

Ms. NICHOLS. And at some later point in the document, they did then develop those numbers that you've seen that spell out in percentage terms what the difference is.

Senator BAUCUS. Well, on its face, I must say this is direct evidence that EPA dismissed the health consequence of an important rulemaking in order to appease Venezuela.

Ms. NICHOLS. I don't think——

Senator BAUCUS. Which frankly, I think, on the face of it, is unconscionable.

Ms. NICHOLS. Senator Baucus, I have reviewed this memo with great care and concern, because I became aware of it only after you asked for the documents from our files. I had never seen the draft, I never saw any previous version other than the final options paper prior to the March 14th meeting, so I was unaware of any versions that had preceded it.

I have both looked at the whole document and also interviewed the staff that were involved in preparing it, and I have satisfied myself that it was their belief that in working through this document with USTR, they were actually, USTR was actually giving them advice in this instance which strengthened EPA's ability to argue the case fairly, based on the specific air quality impacts.

But the use of the word significant, which we frequently use in rulemaking, advocacy context, although it's a useful word, didn't really spell out what the nature of the concern was. And so the EPA staff, after considering that, went back, deleted the adjective, but then did some additional analysis, which was ultimately made part of the final options paper.

And they in no way viewed that as being a concession to the trade interests of a softening of their concerns about the adequacy of the rule. As I've indicated before, by the time that this options paper was being prepared, the EPA staff were in fact advocating that there be a consideration of a proposal to allow Venezuela to set its own baseline.

Senator BAUCUS. Is it your position today that there would be no significant health consequences in allowing Venezuela to set its baseline in the 1990 gasoline data?

Ms. NICHOLS. No, that's not our position, my position. My position with respect to the issue of the significance of allowing Venezuela to use its own baseline is that there is a significant difference in the NO_X benefits from the rule with Venezuela not being allowed to use its own baseline, but in my mind, that significance is overridden by the greater significance of overall achieving a pool of reformulated gasoline that meets the standards set forth in the Clean Air Act.

Senator BAUCUS. We've already touched on this next point I'm going to make, but the final options paper, and again, this is March 14, says that Venezuela's gasoline had nearly twice the amount of sulfur as U.S. average gasoline and more than twice the amount of olefins. We've already discussed that earlier.

The options paper states that RFG produced using Venezuela's 1990 baseline would have 14 percent more nitrous oxide than average. Those figures are correct, are they not, as stated in that memo?

Ms. NICHOLS. Yes, they are, Senator Baucus, but again I would just like to refocus your attention on the fact that the reformulated gasoline provision in the Clean Air Act itself requires that we achieve the improvements in VOCs and toxics through this rule, while holding the NO_X at baseline. The rule itself is aimed at getting maximum air quality benefits, and in the case of the Venezuela proposal, I don't think it should be easily, just lightly or lightly dispensed that there is an improvement in toxics as a result of the Venezuelan gasoline. So I think those are all factors that need to be considered.

Senator BAUCUS. But the rule also calls for improvements in other areas, too, that is nitrous oxides and sulfur.

Ms. NICHOLS. There's no provision with respect to sulfur or NO_X.

Senator BAUCUS. No diminution, no reduction.

Ms. NICHOLS. No worsening of the baseline.

Senator BAUCUS. It's true that one can get into a question of how much, but it is also true that the consequence of Venezuela exporting its gasoline according to this proposal would be an increase.

Ms. NICHOLS. Well, that, only relative to the average, not relative to Venezuela. Venezuela itself will not be allowed to increase the amount of NO_X its gasoline is producing.

Senator BAUCUS. So there will be an increase in the northeastern States as a consequence?

Ms. NICHOLS. No, there will not.

Senator BAUCUS. I thought in answer to Senator Wofford, you said there would be, albeit in your judgment a negligible amount.

Ms. NICHOLS. Only an increase relative to staying with the December 15th rule, not an increase over today's level. It's simply a lesser reduction than we would achieve if we were to stick with the December rule.

Senator BAUCUS. Which as a consequence puts more pressure on those States to find other ways to reach attainment.

Ms. NICHOLS. I think under the circumstances, Senator, that that's not correct, because we have enough other measures, including the 1998 reformulated gasoline provisions, under which all companies will be reducing the NO_X emissions from their gasoline by an average of 5.7 percent, so that I think we are well on track in that regard. No one will be obligated to take up a greater burden.

Senator BAUCUS. And again, as to the Mid-Atlantic and New England areas, where Venezuelan gasoline is primarily consumed, is that correct?

Ms. NICHOLS. Yes.

Senator BAUCUS. And isn't it true that these are areas that are specifically targeted for ozone reductions under the Act?

Ms. NICHOLS. Yes.

Senator BAUCUS. Despite all these concerns about public health, and I must say, I've seen virtually no documents that show a change of heart from December 15th, did EPA agree at the March 14th meeting of the National Economic Council of the White House to propose a new regulation that would allow Venezuela to set its own baseline for its 1990 gasoline?

Ms. NICHOLS. At that March 14th meeting, which I attended, I indicated that EPA was willing to make a proposal to allow Venezuela to petition for its own baseline.

Senator BAUCUS. Who called that meeting?

Ms. NICHOLS. The meeting was called at the behest of the NEC, I believe EPA was involved in setting the date for the meeting, and our staff played a role in it. But I believe that it was called officially by the NEC, because they were the group that had chaired or had called the December 14th meeting that you alluded to earlier. So they were the conveners.

Senator BAUCUS. Did the NEC encourage a rule which was more protective of the environment or less protective, as opposed to the 1990—excuse me, the December 15th, 1993 rule?

Ms. NICHOLS. I wasn't present at the December 14th meeting, so my knowledge of that is based on the notes and recollections of others.

Senator BAUCUS. So you were not there?

Ms. NICHOLS. At the December meeting, I was not present.

Senator BAUCUS. I'm talking about the March meeting.

Ms. NICHOLS. At the March meeting, where I was present, the NEC took no position on what EPA should do whatsoever.

Senator BAUCUS. What was your information with respect to the December 14th meeting?

Ms. NICHOLS. I'm not aware that the NEC was advocating any position with regard to what EPA should do about the protectiveness or level of clean air.

Senator BAUCUS. You have no knowledge, you just don't know?

Ms. NICHOLS. No. And I've never heard or seen any such statement anyway.

Senator BAUCUS. Have you ever asked or inquired?

Ms. NICHOLS. No.

Senator BAUCUS. You don't care what they think?

Ms. NICHOLS. Well, I believe, Senator Baucus, that the issue of compliance with the Clean Air Act and how to achieve it is primarily EPA's judgment, and that it's our job to craft the rule that meets the statutory requirements and goes as far as we can, consistent with other legal obligations and with general rules of fairness and administrative process.

Senator BAUCUS. Were there other agencies there that were opposed to the proposed rule issued yesterday, that is, were opposed to the Venezuelan claim?

Ms. NICHOLS. There were questions raised about what had gone into EPA's thinking and how EPA was approaching the decision, and what the impact would be on the challenge, on the GATT challenge. But no one challenged EPA's calculations or our assessment of the air quality benefits or facts of the rule or the proposal.

Senator BAUCUS. Is the proposed new regulation which you issued just yesterday the same as the September compromise rejected in 1993?

Ms. NICHOLS. It's—there are, the rule is, the proposed rule in yesterday's notice of proposed rulemaking is substantially the same as what was described in September as a compromise proposal from Venezuela. But there are some, it's not identical. There are some refinements, particularly in terms of the enforcement procedures.

Senator BAUCUS. So you say it's substantially the same but with some refinement?

Ms. NICHOLS. Yes.

Senator BAUCUS. Mr. Casey?

Mr. CASEY. Yes, sir.

Senator BAUCUS. Did the State Department send a cable to the U.S. Embassy in Caracas subsequent to the March 14 meeting at the White House, stating that a deal was struck and that EPA had issued a proposed rule to address Venezuela's concerns?

Mr. CASEY. Yes, we did send a cable proposing, if you will, the variation on the September compromise that was presented at the March 14 meeting by EPA. That was sent to our Ambassador to convey to the Venezuelan government.

Senator BAUCUS. Why was that cable sent prior to issuance of the proposed rule yesterday?

Mr. CASEY. There was a desire to inform the Venezuelans of our intention to move forward in part in order to avoid a renewed GATT challenge in Geneva to the fairness of the December 15th rule, and frankly, as a continuation of the conversations that had been held with the Venezuelans since the December 15th rule was put forward.

Senator BAUCUS. Why did the cable also state "Don't tell Congress"?

Mr. CASEY. I don't believe the cable so states, sir.

Senator BAUCUS. Essentially that's what it says.

Mr. CASEY. What it says is, please do not make the proposal public in Venezuela before the United States had an opportunity to consult and brief domestically on the issue.

Senator BAUCUS. Congress was specifically referred to in that cable.

Mr. CASEY. I thought the cable said domestic interests.

Senator BAUCUS. Yes.

Mr. CASEY. Did it also say Congress?

Senator BAUCUS. Yes.

Mr. CASEY. Well, we very much have in mind, Mr. Chairman——

Senator BAUCUS. We're sensitive to the exact words.

Why not tell Congress? That seems to be a little bit precise.

Mr. CASEY. Well, I'm just not that aware of the consultative procedures in the rulemaking, but the cable was sent out to represent, not a State Department position, but basically the Administration's position as a result of the meeting on the 14th.

Senator BAUCUS. Could somebody tell me when, if that cable had not been leaked to the press, that's how we found out about it, that the Administration intended to inform the Congress?

Mr. CASEY. Excuse me?

Senator BAUCUS. When did the Administration intend to inform the Congress of this quite significant change, even though there's no change outside of ordinary procedures and rulemaking and public comment and so on, why?

Ms. NICHOLS. I think perhaps I can address that question from at least my recollection of the March 14th meeting. I believe that the decision taken at that meeting was that the State Department would communicate with Venezuela and would ascertain whether Venezuela, if EPA were to go forward with the proposal, would drop the GATT case and would be receptive to that proposal, because it was at that point we were, I think, concerned about getting geared up to go over to Geneva and have our people there prepare to defend the case.

We were concerned about diverting resources into that direction versus looking at other aspects of this thing. And my understanding was that as soon as the State Department had heard back from Venezuela on this matter that we would then, as an Administration, be notifying Congress and also then moving forward with other types of public process as well.

Senator BAUCUS. I hear you, Ms. Nichols. I don't mean to be confrontational, but that sounds contrary to an earlier statement you made. Earlier you said that this was not to be driven by GATT. The primary concern was quality air. Now, you're telling me that the failure to inform Congress was driven by GATT concerns, and Venezuela agreed to back off from any GATT challenge which was not such a major challenge, as I hear from USTR, there was a problem, but not so major as they claimed.

Ms. NICHOLS. I think the issue is one of timing, Senator, not of the substance. I have accurately described the substance of what went into EPA's decision, and the reasons why we went to the March 14th meeting prepared to make the proposal that I've outlined here. The issue was timing. Your question went to the timing of notifying Congress.

And with respect to the timing, we felt, based on the conversations at that meeting, and I believe it was the advice of USTR and State, although I can't recollect exactly who said what, that it would be best to privately have those discussions with Venezuela, simply to make sure that we weren't going to be wasting a lot of time, both fighting the GATT case and proceeding with our proposal at the same time. And EPA was deferential to their concerns to the extent of not immediately picking up the phone and starting the phone calling process until we had heard back from the State Department.

Senator BAUCUS. My question did go to timing, but your answer largely goes to substance, and the substance or the point, to repeat, sounds like, don't tell, there's perhaps much more into an alleged GATT challenge than it is in the substance of the matter.

Ms. NICHOLS. I don't think so. I think that the issue was when to tell the public, when to issue a proposal, when to talk to interested constituencies and Congress.

Senator BAUCUS. You have no knowledge of a date on which, if this had not come out in the public, the Administration was in fact going to inform members of Congress? Was there any discussion as to when this March 14th meeting——

Mr. CASEY. Mr. Chairman, I was present at the March 14 meeting, and the idea was not to keep things a secret from you, but to, as Ms. Nichols said, get the word down to the Venezuelans quickly and get a quick turnaround. The intention was to inform you immediately after getting a Venezuelan response, which we thought would come a lot more quickly than it did. But the intention was to move forward immediately to consultations, not only with the Congress, but with industry and other interested parties as well.

Senator BAUCUS. My question though, is at that meeting was there a date by which someone in the Administration was going to inform the Congress, subsequent to informing Venezuela?

Mr. CASEY. The decision, as I recall it, was that we were to do so immediately, but there was no fixed date. We thought it would happen within a day or so. It did not.

Senator BAUCUS. Well, it was in fact leaked about a week after the meeting. Still there had been no communication to Congress.

Mr. CASEY. Well, as you would see from the other leaked cable, we got the response back from the Venezuelans just at about that time.

Senator BAUCUS. No, but I'm talking about Congress. I'm making the point, and I'm not going to quibble, but you said the intention was to inform Congress immediately subsequent to informing Venezuela. I'm just saying that a week passed, it was in the public arena but still Congress had not been informed.

Mr. CASEY. But just to correct one point, the one cable does not in any way say don't tell the Congress. What it really says is we want time to consult with the Congress.

Senator BAUCUS. I must say that I wrote a letter to USTR along with 13 other Senators, asking what in the world's going on here, to which we got no response, in the interim, that is, subsequent to the meeting, and got no response until this was leaked to the press.

Ms. Nichols, I understand that the proposal, the September compromise, the modified proposal that you issued yesterday, places a volume cap, I think you said so yourself, on Venezuelan gasoline, limiting its imports to 1990 levels, is that correct?

Ms. NICHOLS. Yes.

Senator BAUCUS. Do you know what the expected levels were for each year, let's say 1992 levels are, 1991 levels are and 1990 levels are?

Ms. NICHOLS. In terms of their market share?

Senator BAUCUS. Yes, the volume that's been imported into the United States, Venezuelan gasoline imported into the United States.

Ms. NICHOLS. The——

Senator BAUCUS. I'll tell you what it is. We have the data here.

Ms. NICHOLS. Millions. [Laughter.]

Senator BAUCUS. It's just a point that needs to be made. When the Administration, you, and others, say that well, we're going to restrict this to 1990 levels, it leaves the impression that that's a reduction from 1993, from 1992, 1991 down to 1990 levels, when in fact the opposite is just the case. That is, that the amount of gasoline imports from Venezuela in years subsequent to 1990 is much lower than it was in 1990.

But to say that they're capped at 1990 levels is technically accurate, but without further information, it leaves a misimpression, because gasoline from Venezuela actually is declining in subsequent years. So if you say, the Administration says that the rule proposes capped 1990 levels, it's almost a 200 percent increase over the amount that was imported then.

Ms. NICHOLS. Well, that's a rather dramatic chart, Senator Baucus, but if you had gone back to 1989, you would have come up with an even higher number, and the numbers may flip-flop. I see, I've got a chart here that's based on Department of Energy data that shows a number of countries with levels that rise and fall. I think the reason for picking 1990 as the year to cap is because 1990 is the year that the baselines were set under the Clean Air Act.

Senator BAUCUS. Yes, I'm just saying——

Ms. NICHOLS. The Clean Air Act baselines are 1990.

Senator BAUCUS. It's just important to know that the 1990 levels are pretty high. That's the only point.

Ms. NICHOLS. Yes, 1990 was the year of the Persian Gulf war, and the United States was actively encouraging Venezuela to export more gasoline to the U.S. market.

Senator BAUCUS. So the proposed rule allowed Venezuela to double, essentially, in subsequent years, the amount of gasoline that it exported?

Ms. NICHOLS. It would allow them to go back up to where they were at 1990.

Senator BAUCUS. Okay, thank you.

Mr. Riggs, at the March 14, 1994 White House meeting, the Department of Energy, as I understand it, was alone in its objection to the Venezuela deal. Is that correct?

Mr. RIGGS. I do not know what all the other agencies' positions were. I have been told by the DOE representative at that meeting that his statement was, other things being equal, if we are in compliance with the Clean Air Act and with the GATT, we should try to help U.S. industry.

Senator BAUCUS. And it was DOE's position that if Venezuela has protectionist policies that discriminated against U.S. gasoline, or at least we shouldn't be doing them a favor by allowing them to import probably into the United States dirtier gasoline that the domestic refiners would have to produce?

Mr. RIGGS. There are three pieces to what you just said. I think our representative said that Venezuela does have protectionist policies. I think I would add at this point that they're making dramatic improvements since 1990. There are still barriers to U.S. participation in the petroleum sector in Venezuela, and our representative at the meeting did refer to that. I don't know if he said anything about bringing in dirtier gasoline.

I think there's been a premise in the whole discussion this morning that troubles me, and that is that we would know what would happen to air quality in the northeast if Venezuela brought in less gasoline, or if in fact we went back to the December rule. I think we can't know that, because we do not know whether Venezuela would in fact continue to export the same amounts, and if they did not, we do not know who would recapture, or rather who would capture their lost market share.

And if it is one of the dirtier U.S. refiners, there may be no degradation of air quality. So there is an unknowable that's underlying the issue.

Senator BAUCUS. Well, the concern is not the 1990 rule, but the so-called September rule, and also the proposed rule. That's the concern.

Mr. RIGGS. Yes. My point is that if Venezuela is not allowed to establish their own baseline, as is now proposed, we do not know whether they would continue to try and export. They have said in a letter, I understand, to EPA, that they might reduce their exports substantially.

And if they did, we cannot necessarily assume that the replacement gasoline would be at the Clean Air Act baseline. We don't know which company would capture that share of the market. And as Ms. Nichols has said earlier, some U.S. companies are above the baseline, some are below.

Senator BAUCUS. Mr. Shapiro, I have a letter from the President of Irving Oil, the largest oil company in Canada, a nation that exports even more gasoline to the United States than Venezuela, a letter which is addressed to the Canadian Minister for International Trade, and states that the rule being proposed by EPA would provide Venezuela with a significant competitive advantage over Canadian refiners.

The letter complains that Irving Oil has invested major capital expenditures to bring its refinery in compliance with U.S. Clean Air standards for the sole purpose of exporting Canadian gasoline to the United States. I'm just curious, why does this rule, proposed rule, not put Canadian companies at a trade disadvantage?

Mr. SHAPIRO. Mr. Chairman, I understand that EPA's rule on Canadian refiners was based on its belief that an importer that was also a refiner and that exported 75 percent of its 1990 baseline to the U.S. would have the requisite data to establish an individual baseline, and the applicable modeling methods that would accurately predict the qualities of 1990 gas actually sent to the U.S. And I think that we obviously should, we should be responsive to that letter, but that's my understanding of the Canadian situation. To be honest, I've spent more time in recent days thinking about the Venezuelan problem.

Senator BAUCUS. I can understand why.

On the face of it, I have to look into this for myself, it sounds like the Canadians are upset because they think they're being discriminated against. They were good guys, they spent the money. And now they hear that Venezuela, not good guys, who didn't spend the money, are getting away with a break.

Ms. NICHOLS. Well, if in fact Irving Oil, and I have not heard from them, has the level of data that is called for to establish a baseline, and if EPA went forward with this proposal, they would be equally capable of applying for it. I don't believe we've had any communication from them.

Senator BAUCUS. Well, but the point is that seemingly Canada played by the rules, and felt, I assume that there were discussions that Canadian representatives may have had with EPA as Venezuelan representatives had, that the EPA was going in the direction of a rule that was actually, in fact, issued December 15th, 1993, and consequently, beginning to make, at least according to the President, capital expenditures in the participation of that rule, now finding that, well, now there's a proposed rule which allows foreigners to back off and not have to make these, even though, after all Canada all along was playing by the rules.

Ms. NICHOLS. Well, Senator Baucus, as I said before, I'm not familiar with the situation of Irving Oil. But I think this is exactly the type of comment that we're hoping to elicit during the comment period on our recent proposal and we'll certainly take it very seriously.

Mr. CASEY. Mr. Chairman, could I note that Venezuela, PDVSA, is spending about $2.2 billion in a major overhaul and improvement program with three U.S. contractors, Kellogg, Bechtel and one other, in part to meet the requirements of the Clean Air Act, so that it is not quite the case that Canada has played by the rules and Venezuela has not, because they are making significant investments.

Senator BAUCUS. I'm sorry, I was distracted.

Mr. CASEY. Well, just to say that in contrast to the letter that you have there, it is a fact that Venezuela is making significant investments, to the tune of over $2 billion to upgrade its refineries in order to meet U.S. environmental requirements, so that they are not, if you will, not playing by the rules, the investments are being made.

Senator BAUCUS. But the question is, if Venezuela and its five or more refineries wanted to keep the same market share in the U.S. under the December 15, 1993 proposal, they probably would have to spend more dollars than they would have to spend under the proposed rule? That's the question.

Mr. CASEY. I believe, I'm certainly no expert in this, but I believe it's more a question of timing, that is, how quickly their reformulated gas at the quality level required under the December 15th rule would come onstream.

Senator BAUCUS. Well, I thank all of you for being with us today. I will be entering several documents into the record, many of those are already referred to.

I must say I have serious concerns about the environmental implications of the Venezuelan reformulated gasoline deal prior to today's hearing, and I also have doubts about the process used by the Administration negotiating agreement to give what I regard as favorable treatment to Venezuela gasoline exports, and after today's hearing, I have frankly heard nothing to persuade me of that, and according to the documents I have, the evidence, I think, shows that EPA made the right decision on December 15th, and I see nothing that approaches anything that could be called compelling or persuasive to move in the direction of the proposed rule.

I think that by issuing this proposed rule, EPA is disregarding its own internal concerns, as has been documented very, very fully. But the adverse effect on air quality and minimizing significant public health consequences, I think that today's testimony demonstrates that after a process that lasted more than two years, during which Venezuela's arguments were well-considered but dismissed by EPA that rather abrupt and I must say secret interference by the White House, other agencies caused EPA to reverse its position.

I am extremely disappointed that EPA did not hold to its earlier position and better argue in behalf of the public health and the environment. I'm also quite concerned that Congress, particularly this committee, was not at all informed of these negotiations and that I had to first learn about them from the leaked cable that we discussed earlier.

As to the Administration's concerns about the GATT, it is apparent that yesterday's proposed rule will only inflame international trade relations. One of the documents I am placing in the record, mentioned earlier, is from the largest oil company in Canada, a NAFTA partner. That company is quite upset by what it regards as the discriminatory effect that this proposed rule will have on them, how it will place them at a competitive disadvantage.

It seems rather curious that we discriminate against our free trade neighbor to the north by providing special treatment to the protectionist Venezuelan government. I intend to vigorously pursue this investigation until I find out exactly why the White House became involved.

I also intend to continue fighting to block yesterday's rule from becoming final. If necessary, I will introduce legislation to prevent further funding of the rule if EPA in fact attempts to make it final. I will continue pursuing this matter until I am better assured of what, in fact, is going on here.

The bottom line here, really, is to protect the public health, because that is our duty, and second, to protect the process in this democratic country of ours so that the public is better assured that results are reached in a fair and orderly way.

Ms. NICHOLS. Senator Baucus, Administrator Browner and I share your concerns, both about the public health implications as well as about the process.

I would like to submit three letters that were, I believe, faxed to you yesterday. One is to yourself, one is to Secretary of State Christopher, and the other is to Ambassador Kantor. The letters are not identical, but substantially reiterate in the letter to you the Administrator's commitment to a fair and open process and consideration of any potential changes to the rule and the desire to consult with you further.

Senator BAUCUS. Thank you.

Mr. SHAPIRO. Mr. Chairman, could I just inquire as to whether our prepared testimony was going into the record?

Senator BAUCUS. Yes, the prepared testimony of each of you will be in the record.

Mr. SHAPIRO. Thank you.

Senator BAUCUS. Thank you very much. Hearing is adjourned.

[Whereupon, at 11:54 a.m., the committee was adjourned, to reconvene at the call of the Chair.]

[Statements submitted for the record and appendixes follow:]

TESTIMONY OF
MARY NICHOLS
ASSISTANT ADMINISTRATOR FOR AIR AND RADIATION
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
U.S. SENATE

April 22, 1994

Good morning, Mr. Chairman and Members of the Committee. I am pleased to appear before you today to testify on those aspects of the reformulated gasoline program that deal with the regulation of imported gasoline.

Before addressing the specific questions in your letter of invitation, a little background is essential.

As you know, the final reformulated gasoline regulations were promulgated by EPA on December 15, 1993. The reformulated gasoline program was created by the 1990 Clean Air Act Amendments, and requires that beginning in January 1995 reformulated gasoline must be used in the nine cities with the worst levels of ozone pollution. The Clean Air Act also provides that the governor of a state may opt into the reform program for any other ozone nonattainment area. Currently, the Governors of all states in the Northeast United States, from Virginia through Maine, have opted into the reform program for all ozone nonattainment areas in their states. In addition, the Governors of Kentucky and Texas have opted in for some, but not all, ozone nonattainment areas in their states. We estimate that with at current level of opt-ins, approximately one-third of overall U.S. gasoline consumption will be reformulated in 1995.

Under this program, reformulated gasoline must result in reductions in motor vehicle emissions of ozone forming volatile organic compounds (VOC's) and toxics. The levels of emissions reductions are in two phases: Phase I standards apply from 1995 through 1999, and the more stringent Phase II standards apply beginning in 2000. In addition, emissions of oxides of nitrogen (NOx) may not increase relative to 1990 levels under Phase I, and under Phase II NOx emissions must be reduced. VOC and NOx emissions are regulated because of their role in the formation of ozone pollution, and toxics emissions are regulated because 50% of the cancer deaths from toxic air pollution are attributed to motor vehicle emissions.

This program also requires that each refiner and importer must keep non-reformulated gasoline (conventional gasoline) at least as clean as the gasoline produced or imported in 1990, to prevent refiners from "dumping" into conventional gasoline the dirty gasoline components remaining from the reformulated gasoline refining process. These are the "anti-dumping" requirements.

The anti-dumping standards, thus, are the quality of a refiner's gasoline in 1990, or the refiner's 1990 baseline.

These 1990 baselines also form a portion of the standards for reformulated gasoline, but only during 1995 through 1997. EPA proposed use of individual baselines with the reformulated gasoline standards as a result of the Regulatory Negotiation EPA conducted as part of the reformulated gasoline rulemaking. At the time of the Reg Neg, in 1991, EPA did not know the exact relationships between all gasoline parameters and the levels of VOC, toxics, and NOx emissions. But industry needed to know as much as possible in 1991 or 1992 about the standards that would apply for reformulated gasoline in 1995, in order to have the lead-time necessary to make refinery modifications. As a result, one of the key agreements from the Reg Neg was that EPA would propose the so-called "simple model" for certification of reformulated gasoline during 1995 through 1997. EPA adopted these simple model provisions in the Final Rule.

The "simple model" sets industry-wide standards for the parameters for which there was confidence of their emissions effects (for example, RVP, benzene and oxygen). There were other parameters, however, for which we knew there was a likely emissions effect, but we did not know the magnitude of this effect;

these parameters are sulfur, T-90, and olefins. The simple model's approach for these three parameters is to hold each refiner and importer to its baseline level for these parameters. If each refiner's and importer's reformulated gasoline remains below their 1990 baseline levels for these parameters, then the U.S. average levels will remain constant at approximately 1990 levels. As a result, we would avoid any adverse emissions effects that would result from elevated levels of sulfur, T-90, and olefins.

Beginning in 1998, however, the "simple model" may no longer be used for certifying reformulated gasoline, and all refiners and importers must use the "complex model." The "complex model" is used to calculate the levels of VOC, toxics, and NOx emissions for gasoline formulations in relation to 1990 U.S. average gasoline quality (Clean Air Act baseline gasoline), and does not rely on individual baselines. The complex model is based on significant amounts of EPA and industry emissions test data collected after the regulatory negotiation to estimate the emissions effects of many gasoline parameters not included in the simple model.

The reformulated gasoline regulations include procedures for establishing baselines of 1990 gasoline quality that are different for domestic refiners versus importers. Domestic refiners use: 1) actual test data from gasoline produced in 1990; 2) test data from 1990 blendstocks; or 3) gasoline and/or blendstock test data from years subsequent to 1990 combined with an evaluation of the refinery configuration to predict 1990 gasoline quality.

The rules, however, allow importers to establish baselines only by using actual 1990 gasoline test data. The rules do not let importers use the other baseline-setting methods available to domestic refiners, because they are not expected to accurately predict the quality of gasoline imported in 1990. We expect that few, if any, importers will have adequate 1990 test data, however, and as a result most, if not all, importers will be assigned a baseline that approximates the average quality of gasoline used in the United States in 1990, called the "statutory baseline" or "Clean Air Act" baseline.

All of my testimony to this point is background for the issue that is the concern of this Committee, the baselines that apply to imported gasoline. Now, I would like to describe the events around what we call the foreign refinery baseline issue.

Our first proposal for reformulated gasoline, in July 1991, treated all refiners equally and did not draw any distinctions between domestic refiners and importers with regard to baselines. This is consistent with our goal for all regulations, that parties who are situated similarly be treated equally. At that time, we simply had not identified the issue of baselines for foreign refiners as presenting difficult questions.

One month later, in August 1991, the Regulatory Negotiation Agreement for reformulated gasoline was signed. This Agreement does not address baselines for imported gasoline one way or the other.

We took our next position on foreign refiner baselines in our April 1992 reformulated gasoline proposal, where we differentiated between domestic and foreign refiners. By the time of that proposal, we had identified the foreign refiner baseline issue, and were concerned about three things if we allowed foreign refiners to establish baselines: 1) that foreign refiners would not have the data necessary to establish accurate baselines; 2) that EPA would be unable to enforce a program that relied on foreign refinery baselines; and 3) that there would be adverse environmental consequences from allowing individual foreign refiners to choose whether or not to establish an individual baseline, what we call the "gaming" issue.

Our gaming concern was that some foreign refiners with "cleaner"-than-average gasoline, and who could establish an individual baseline, would instead choose the statutory baseline, and then degrade their gasoline quality. Those with "dirtier"-than-average gasoline would likely choose their own individual baseline.

The net effect of this selection process could be a degradation in the overall quality of imported gasoline.

In our April 1992 proposal, our solution to these concerns was to treat all foreign refiners as a class, by assigning the statutory baseline to all imported gasoline.

In response to our 1992 proposal, we received comments from Petroleos de Venezuela (PDVSA), the Venezuelan national oil company. PDVSA complained that the baseline-setting approach we proposed for imported gasoline was unfair, in that domestic refiners would be able to use individual refinery baselines, while imported gasoline would be held to the statutory baseline. PDVSA said they would not be able to meet the olefin level in the statutory baseline until 1996 or 1997. This is true, according to PDVSA, even though the actual olefin levels of their gasoline in 1995 will be cleaner than their 1990 baseline levels as a result of refinery modifications they have made in order to produce gasoline to meet the reformulated gasoline standards. PDVSA also said that the EPA proposal for baseline-setting would violate the equal treatment provisions of the General Agreement of Tariffs and Trade (GATT).

EPA officials held a series of meetings on the foreign refiner baseline issue during the Fall of 1992 and during 1993. These included meetings with PDVSA officials, with domestic refiners to hear their concerns, and with representatives of other agencies, primarily officials from the Office of the U.S. Trade Representative and the State Department, to better understand the GATT requirements.

Throughout these discussions, EPA's purpose was to identify the optimal solution to the foreign refiner baseline issue, that would treat domestic and foreign refiners as equally as possible, without sacrificing the air quality benefits intended for the reformulated gasoline program.

Our February 1993 proposal invited comment on allowing individual baselines for foreign refiners with certain limitations. In September, 1993, a fairly specific approach to regulating foreign refinery baselines was discussed with

PDVSA, that would have allowed limited use of foreign refinery baselines. While this approach seemed to address our concerns and to be acceptable to PDVSA, we were not convinced it was the optimal solution from an environmental prospective. In late 1993, we were evaluating a number of additional options, some of which included modified "standards" for imported gasoline that would rely on "complex model" analyses to achieve the necessary air quality benefits.

Through these late 1993 discussions, we learned that all foreign refiners probably are not equal with regard to our concerns. In particular, we learned that PDVSA probably does have the data necessary to establish accurate individual baselines for their refineries. In addition, we concluded that we might be able to construct an enforcement program that works well with foreign refinery baselines. Lastly, we became less convinced that giving foreign refiners the option of establishing individual baselines would result in adverse environmental consequences from gaming.

We were faced with a court-imposed deadline for issuing the reformulated gasoline final rule of December 15, 1993. As that date approached, we had not fully resolved the issues involving foreign refiner baselines. As a result, we promulgated the final rule with the baseline-setting approach that had been proposed in 1992. At the press conference announcing the final rule, however, I explained that EPA was still considering this issue, and would continue discussions with PDVSA.

The Venezuelan's responded to this invitation, and EPA held meetings with them during December 1993. On January 14 of this year, however, Venezuela initiated formal GATT proceedings on the reformulated gasoline final rule. The discussions with the Venezuelan Government continued subsequent to their GATT filing, and culminated in an agreement to settle their GATT complaint last month, on March 22.

Under this agreement with the Venezuelan Government, they have temporarily withdrawn their GATT complaint. In return, EPA has agreed to propose for full public comment an approach for regulating imported gasoline that would allow limited use of foreign refinery baselines. This proposal was signed by Administrator Browner on Thursday.

Under the proposal, importers would be allowed limited use of baselines established for a foreign refinery to demonstrate compliance with the reformulated gasoline standards for gasoline produced at the foreign refinery and imported for use in the United States. Use of individual foreign refinery baselines would be limited in the following ways:

- EPA would have to specifically approve the baseline for the foreign refinery. In order to obtain a baseline, the foreign refiner would have to submit a petition to EPA, which would include the same types of gasoline and blendstock testing data and refinery modelling analyses that domestic refiners must submit. In addition, a foreign refiner would have to support its baseline petition with a report prepared by an independent baseline auditor. As with domestic refiners, EPA would have to approve the auditor. One key aspect of a foreign refiner's baseline petition is that it would have to conclusively establish the quality and volume of gasoline that was used in the United States in 1990, and not just the refinery's overall gasoline quality in 1990.

- Individual foreign refinery baselines could be used by importers only to demonstrate compliance with reformulated gasoline standards, and could not be used to demonstrate compliance with anti-dumping standards.

- The total volume of imported gasoline that could be subject to the individual baseline for any foreign refinery would be limited each year to the refinery's 1990 baseline volume. This volume limit would ensure that the emissions of each foreign refiner's gasoline would be no worse beginning in 1995 than they were in 1990.

- The importer would be required to establish the refinery-of-origin for any imported gasoline that would be subject to an individual foreign refinery baseline, through gasoline inspections and audits conducted by independent inspectors and auditors at the foreign refinery.

In addition, an annual audit by a U.S.-based CPA would be required. The auditor would be required to confirm that the gasoline loaded onto the ship was in fact produced at the foreign refinery in question.

- EPA inspectors would have to be given full access to the foreign refinery to conduct announced and unannounced inspections and audits related to the individual foreign refinery's baseline or any gasoline produced at the foreign refinery.

An additional constraint on use of individual baselines, that I discussed earlier, is that individual baselines are relevant for reformulated gasoline certification only during 1995 through 1997. Beginning in 1998 all compliance determinations for reformulated gasoline are in relation to the statutory baseline. This time constraint would also apply to importers using individual foreign refinery baselines.

Importers would be able to use an individual foreign refinery baseline only if all of these constraints and conditions are fully met. In the event any condition is not met with regard to any foreign refinery, importers would not be allowed to use that foreign refinery's baseline.

The proposal asks for public comments on the specifics of the approach I have just described and its underlying assumptions, and on other ways of resolving the foreign refiner baseline issue. In addition, we are interested in receiving comments on any potential environmental and public health effects. I want to assure you that I am strongly committed to full public participation in this rulemaking process and have not come to any conclusion as to what the final resolution should be.

I would now like to clear up some misimpressions about "dirty" Venezuelan gasoline. While it is true the Venezuelan gasoline is projected to be somewhat dirtier in some respects in 1995 compared to statutory baseline gasoline, it is projected to be cleaner in others. If PDVSA does not clean up its gasoline from 1990 levels the environmental impact will be an increase in NOx of about two tenths of one percent in the Northeast U.S. compared to the statutory baseline. If it cleans up its gasoline from its 1990 levels, as it anticipates, the environmental effect will be a slight increase - eight one-hundreths of one percent - in NOx in the Northeast U.S. as compared to the statutory baseline. This increase is in comparison to gasoline that meets the statutory baseline. If, however, PDVSA's 1995 gasoline is compared to their 1990 gasoline quality (like domestic refiners), there is no increase in emissions.

In addition, under the proposed approach PDVSA's gasoline is projected to be slightly cleaner than statutory gasoline in terms of VOC emissions, and much cleaner in terms of toxics emissions.

In conclusion, I would like to emphasize that the proposal signed yesterday is only a continuation of a process in which EPA has been engaged for at least the past two years: to identify the optimal solution to the issue of regulating imported gasoline under the reformulated gasoline program, taking into account the requirements of the Clean Air Act and the GATT, and the views of all who are regulated parties under the reformulated gasoline program or who would benefit from the air quality improvements resulting from the use of reformulated gasoline. In addition, the proposal signed [yesterday] is just that: it proposes an option for addressing the foreign refinery baseline issue, and seeks public comment on this option. We have scheduled a public hearing on the proposal for next month, on May 23. EPA is not obligated to promulgate a final rule that follows the proposal. EPA will promulgate an approach for regulating imported gasoline that differs from the December final rule only if we are convinced, following full public comment, that the new approach is better than the December rule's approach.

We are absolutely committed to, and have preserved the integrity of, EPA's rulemaking process and the opportunity for public participation. No substantive promises or agreements have been made that would require any particular outcome from the proposal we signed yesterday.

This concludes my comments. Thank you for the opportunity to address this issue with you. I will be happy to answer any questions you may have.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 21 1994

OFFICE OF
AIR AND RADIATION

Honorable Max Baucus
Chairman, Committee on Environment
and Public Works
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

In your letter of April 18, 1994, you asked for certain information regarding the oxides of nitrogen (NOX) emission from Venezuelan-imported reformulated gasoline (RFG) in the Northeast Ozone Transport Region (OTR). A response to each of your questions is as follows:

1. Which areas of the region have the highest conventional gasoline and RFG use by volume?

The largest cities in the OTR will have RFG in 1995, either because they are one of the nine areas designated by statute to have RFG or have opted-in. The six largest cities due to have RFG are (in order of size): New York City; Philadelphia; Boston; Washington, D.C.; Baltimore; and Hartford. We are unable to perform a city-by-city analysis because gasoline data is not collected on this basis.

2. Which areas of the region use Venezuelan-imported conventional gasoline and RFG, and what are the volumes?

We have no available information on what areas of the OTR use Venezuelan gasoline. We do know that one of the principal markets for Venezuelan gasoline is the Northeast. Also, based on information from the Energy Information Administration, U.S. Department of Energy (EIA), in 1990, 25,279,000 million barrels of Venezuelan gasoline was imported into the U.S., 1,558,000 into PADD III (Midwest) and 23,721,000 into PADD I (East Coast).

3. Using 1990 PDVSA import levels, for the three areas that are the highest-volume users of Venezuelan RFG, provide the predicted NOx emissions of Venezuelan RFG under the December 15, 1994 rule and, separately, provide the predicted NOx emissions for Venezuelan RFG under the rule EPA agreed to issue as a consequence of the March 14, 1994 NEC meeting at the White House.

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We explicitly reject the contention that the proposed rule issued today on foreign refinery baselines was a direct consequence of the March 14 meeting. We believe that the March 14 option mentioned in your letter refers to the option outlined the proposed rule issued today and will refer to it as such. Based on calculations using the complex model (Phase I, summer gasoline) contained in EPA's RFG December 15 final rule, we calculated the percent difference between RFG using the statutory baseline (December 15 rule) and the proposal option. Based on two scenarios (1990 PDVSA individual baseline and PDVSA's projected 1995 gasoline quality), we found that the percentage differences between the December 15 rule and the proposal option for NOx, VOC and Toxics for a vehicle operating on PDVSA gasoline are:

	1990 PDVSA Baseline (%)	1995 Projected PDVSA Quality (%)
NOx	12.28	5.39
VOC	-0.40	-0.99
Toxics	-2.65	-8.14

To calculate the NOx impact from PDVSA gasoline in an OTR city, we used PDVSA's overall market share in the Northeast (confidential business information provided by EIA) and a figure of 24%, representing the percentage of the total NOx inventory attributable to gasoline-fueled, on-road mobile sources (based on NOX inventory contained in the SIP for the State of Massachusetts). The results for the two scenarios noted above are:

a. 0.18 percent (i.e., approximately two-tenths of one percent) increase in NOx using PDVSA's 1990 individual baseline and

b. 0.08 percent (i.e., approximately one-tenth of one percent) increase in NOx using PDVSA's projected 1995 gasoline quality.

I hope that this information has been helpful to you. My staff and I are available to discuss this and any other information with you.

Sincerely yours,

Mary D Nichols

Mary D. Nichols
Assistant Administrator
for Air and Radiation

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN 23 1994

OFFICE OF
AIR AND RADIATION

Honorable Max Baucus
Chairman, Committee on Environment
and Public Works
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

Thank you for your letter of May 24, 1994 requesting more information about the Environmental Protection Agency (EPA's) deliberations surrounding the reformulated gasoline (RFG) final rule and the foreign refiner baselines proposal. On June 10, 1994, Gary Guzy of the EPA Office of General Counsel responded to your request for documents. This letter is to address your specific questions and provide background for the Agency's position on foreign refiners and reformulated gasoline.

Questions from the Chairman

1. During the hearing, the Assistant Administrator for Air testified that there is a .18 percent differential in nitrous oxide emissions in Venezuelan RFG, based on EPA's knowledge of PDVSA's exports to the United States. How many millions of gallons did EPA assume PDVSA would be exporting and include in the formula from which the .18 percent figure was derived?

EPA used the figure 996,282,000 gallons, which is the volume of 1990 gasoline imported into PADD I (East Coast) by Petroleos de Venezuela (PDVSA), according to the Department of Energy.

2. The Assistant Administrator for Air also testified that negotiations with Venezuela were an ongoing and evolutionary process. In this regard, please provide the dates of all meetings between PDVSA representatives or representatives of the Venezuelan government that pertained to the RFG rule that occurred between September 1, 1993 and March 15, 1993.

The following is a list of meetings that took place:

October 27, 1993	Telephone conversation between Mike Sherman, counsel to PDVSA, and Mary Smith, EPA.

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December 3, 1993	Meeting between Bill Scott and Mike Sherman, counsel for PDVSA, and Mary Nichols, Dick Wilson, Mary Smith, George Lawrence, and John Hannon of EPA.
December 10, 1993	Meeting between Venezuelan Minister of Energy and Mines; Mike Sherman, counsel for PDVSA; and Mary Nichols, Dick Wilson, Mary Smith, George Lawrence, and John Hannon of EPA.
December 21, 1993	Telephone conversation between Mike Sherman, counsel to PDVSA, and John Hannon, EPA.
December 29, 1993	Meeting between Mike Sherman, counsel to PDVSA; Luis Grisanti, Venezuelan Minister Counselor; and Mary Smith, George Lawrence and Chip Lamason of EPA.
January 18, 1994	Meeting between Mike Sherman, counsel to PDVSA, and Mary Smith and Chip Lamason of EPA.
January 20, 1994	Meeting between Mike Sherman, counsel to PDVSA, and Mary Smith and Chip Lamason of EPA.
January 25, 1994	Meeting between Mike Sherman, counsel to PDVSA, and Mary Smith and Chip Lamason of EPA.
January 27, 1994	Telephone conversation between Mike Sherman, counsel to PDVSA, and Mary Smith, EPA.
February 2, 1994	Telephone conversation between Mike Sherman, counsel to PDVSA, and Mary Smith, EPA.
February 7, 1994	Telephone conversation between Mike Sherman, counsel to PDVSA, and Mary Smith, EPA.
February 14, 1994	GATT consultation with various Venezuela government representatives. EPA attendees were Chip Lamason and John Hannon.
February 7, 1994	Telephone conversation between Mike Sherman, counsel to PDVSA, and John Hannon, EPA.
February 16, 1994	Telephone conversation between Michael Sherman, counsel to PDVSA, and John Hannon, EPA.
February 17, 1994	Telephone conversation between Mike Sherman, counsel to PDVSA, and Mary Smith, EPA.

Questions from Senator Lieberman

1. The Assistant Administrator for Air testified that EPA does not know the quality of constituents in the 1990 baseline of each domestic refiner who will market RFG in the northeast. Why does EPA lack information on the individual baselines of domestic refiners?

Under the RFG Final Rule promulgated on December 15, 1993, domestic refiners are required to submit baseline calculations to EPA by June 1, 1994, unless the refiner needed to collect data after December 15, 1993 to support its submission, in which case the baseline must be submitted by September 1, 1994. EPA did not receive a significant number of baseline submissions from refiners until shortly before June 1, 1994. EPA has not yet had the opportunity to evaluate these submissions. Several informal attempts to obtain baseline information prior to June 1 were made but refiners informed EPA that such data was not available.

2. How did EPA decide to require the domestic refiners to use the 1990 baseline rather than the statutory baselines without basic air quality information?

EPA proposed the use of individual domestic refiner baselines as a direct result of the Regulatory Negotiation held by the Agency in 1991. At that time, EPA was not able to accurately model the relationship between all gasoline parameters and the levels of VOCs, toxics and NOx emissions. EPA was confident about the emissions impacts of certain parameters, but had significantly less confidence about other parameters. At the same time, EPA felt that it was important to concretely identify the future 1995 reformulated gasoline standards in order to allow refiners to plan refinery modifications and compliance. In addition, EPA wanted to avoid having refiners make perhaps needless investments to reduce individual parameters to the statutory baseline where EPA did not have adequate information about air quality impacts. EPA was concerned that the investments would be wasted once the Agency was able to appropriately model the emissions impacts of a wide number of parameters, thereby allowing refiners to choose the most cost effective way to achieve the required emissions reductions. For these reasons, EPA and the other parties to the Regulatory Negotiation supported proposal of the "simple model" for certification of reformulated gasoline from 1995 through 1997. Due to leadtime concerns, EPA did not drop the simple model in the Final Rule. The simple model allows adequate leadtime for refiners to design necessary refinery modifications, obtain necessary permits and capital, complete construction, and complete start-up and equipment shakedown prior to mandatory use of the complex model starting in 1998.

The "simple model" sets industry-wide standards for the parameters for which there was confidence in 1991 about their emissions effects: RVP, benzene and oxygen. These parameters are strictly controlled under the simple model. For certain other parameters, the Agency knew there was a likely emissions effect but did not have sufficient data and other information to appropriately model the emissions impacts: sulfur, T-90 and olefins. Under the simple model, these three parameters are capped for each refinery at its individual 1990 baseline levels. This approach achieves the emission reductions required for RFG by the Clean Air Act by controlling those parameters about which the Agency had the most information, and avoids any adverse emissions effects that would result from changing the 1990 levels of sulfur, T-90 and olefins.

3. Is it true that it is impossible for domestic refiners to have levels of olefins in their 1990 baselines, and consequently in their RFG, that are higher than the PDVSA level?

As detailed above, EPA at this time has not completed its analysis of domestic refiner baselines. It is certainly not "impossible" for a domestic refiner to submit a baseline with higher olefin levels than PDVSA's. It is possible that at least some domestic refineries sold gasoline with a high olefin content average in 1990, and will, therefore, have baseline olefin levels equal to or higher than PDVSA's projected 1995 gasoline.

4. In response to one of my questions, the Assistant Administrator for Air appeared to say that the system of verification contained in the April 21 proposed rule is different than anything that EPA had previously considered. However, she subsequently testified that the verification system contained in the proposed rule was virtually identical to a proposal considered in September 1993. In light of the similarity between the September 1993 rule, which was rejected by EPA, and the proposed rule, how can EPA now determine that the same proposal is feasible and will not present verification, compliance, and enforcement problems?

The system of verification and compliance in the April 21 proposal differs slightly from the September proposal and has always been viewed as quite enforceable by staff. In the fall of 1993, there were numerous issues that needed to be analyzed and decided by the December 15 court-ordered deadline, only one of which was the foreign refiner baseline. Because of the complexity of the foreign refiner baseline issue and the interest in further analyzing a variety of possible options for resolving the issue, EPA promulgated a rule on December 15 that maintained the proposed scheme. EPA committed at that time to continue to explore the issue, and the May 3, 1994 proposal resulted.

clearly cannot be driven to resolution in a reasonable number of years.

The CHAIRMAN. Well now, the IFR, did I not read where you could have one of those reactors in 10 to 15 years?

Dr. PANOFSKY. Not in this production form. And others are more expert on that. A prototype demonstration—and others can correct this more accurately—can be something of the time scale you indicate, but to really have a campaign starting to burn up weapons plutonium in 10 years hereafter is further downstream than that, and to have a campaign to really make a worldwide impact is further down stream than that.

The CHAIRMAN. Well, is it inconsistent to have a light water reactor or CANDU policy with an IFR as a complementary and later phase?

Dr. PANOFSKY. Oh, yes. I believe we made this clear in our report that there are two quite distinct phases and problems; namely, to try to terminate intermediate storage as quickly as we can and make the weapons material physically inaccessible. That, we believe, should be handled either by light water reactors, CANDU, or vitrification.

The CHAIRMAN. And how long would it take to cycle all of that through?

Dr. PANOFSKY. It depends how many reactors are being harnessed for that purpose. Let me give you an example. If two or three something like 1000 megawatt electric reactors which are capable of carrying a full MOX load can be harnessed for this, in that case the 50 tons can be disposed of in something short of a decade. A similar figure applies to the CANDU. If only partial MOX loading is used then it either will take longer or it will involve a larger number of reactors.

The CHAIRMAN. I thought we had—oh, this is early in the next century we will have the 50 tons of plutonium?

Dr. PANOFSKY. That is right, approximately. The United States has not yet made a firm decision about how much plutonium shall be declared surplus. We have the plutonium which we will declare surplus, we have the plutonium which will be held in military reserve, and we have the plutonium which is required for the national stockpile. And at this time there is no declared policy, so therefore the 50 ton figure is just a "for example" figure which we use to answer questions of this kind; namely, how long will a campaign take to get rid of it.

The CHAIRMAN. Now, do you think that requirements for tritium impact on what we do on the reactor?

Dr. PANOFSKY. This is something which our committee has not considered, but I have personally been involved in this in various ways. My personal view is that the tritium production question should be totally unlinked from the policy decisions about disposition of weapons plutonium. And now the reason for that is the following: As you know, the NPR reactor for producing tritium has been canceled, and the fortunate reason for that is, of course, the fact that the progress in arms control has been more rapid than the decay time of tritium, and therefore that the time required for decision on that matter has been receding into the future.

Now, at the goal quantity for tritium production during the Cold War, a big new reactor was required. As the goal quantities recede in view of the diminished requirements for the active stockpile other options for producing tritium than a new production reactor become more competitive. And although that matter has to be addressed, it is not at all clear that a new reactor will be the right solution for the tritium problem.

The CHAIRMAN. You think the accelerator technology?

Dr. PANOFSKY. It becomes more competitive. The accelerator production of tritium was essentially uncompetitive with reactor production of tritium at a time when the goal quantities of tritium which were required were the Cold War figures, which are classified, because the power required to run the accelerator was essentially the same as the power required to be produced by a reactor which could by itself produce the quantities directly.

But as the quantities recede which are required, then the power requirements of the accelerator dive down quite rapidly and therefore it is not a foregone conclusion that a reactor, a new reactor, is necessarily a right answer to the tritium problem.

The CHAIRMAN. How much time in rough times do you think we might have before we make a judgment on what to do about tritium requirements?

Dr. PANOFSKY. The answer to that is very controversial, Senator. There are some who say it has to be answered in the next 2 or 3 years. My personal view—and please, this is a personal view—is that we have a lot more time than that because, to put it bluntly, our stockpile, or deployed weapons, will under START I and II, enter tactical removals such that the total number of nuclear weapons deployed will go down by about a factor of five by the year 2003.

The CHAIRMAN. Do you think we would have 10 years?

Dr. PANOFSKY. Something like that is my personal view. Let me say again that that view is not shared by others who believe the decision is more urgent.

The CHAIRMAN. Mr. Curtis, do you think the tritium question is relatively irrelevant to the question of what to do about plutonium for now?

Mr. CURTIS. I think that the advice to examine the tritium question in relationship to the weapons requirements of the country rather than getting it tangled in the disposition option is good advice. Let me offer some information on the subject that may be useful.

As you know, the Department has been engaged in a Reconfiguration Programmatic Environmental Impact Statement. That process will specifically examine the tritium option. A draft Environmental Impact Statement is expected in March 1995 for a record of decision in November 1995. That draft will present an examination of four technologies, including modular gas reactor to be located at five sites. So that will provide, in part, the analytic framework for this judgment.

The CHAIRMAN. Mr. Curtis, you say that the United States does not encourage the civil use of plutonium, and accordingly does not itself engage in the reprocessing of plutonium for either nuclear power or nuclear explosive purposes, but you are reexamining that.

In light of—in other words, you would engage in plutonium for nuclear power if the 1996 decision indicates to use a light water reactor. Do you understand?

Mr. CURTIS. No, I am afraid I do not. The sentence you read comes from the Presidential Decision Directive——

The CHAIRMAN. That is right.

Mr. CURTIS [continuing.] In the President's speech to the United Nations, and that is the policy of this Government.

The CHAIRMAN. Dr. Panofsky.

Dr. PANOFSKY. I think there is a small technical issue here. If it is decided to burn weapons plutonium in light water reactors, it does not involve reprocessing plutonium, because the weapons plutonium is already reprocessed, so it does not involve that question at all. It only would involve the question whether on a once-through basis to use plutonium as a fuel, not to do reprocessing.

The CHAIRMAN. All right, so that would not at all be inconsistent with——

Dr. PANOFSKY. It would not be in conflict with the reprocessing policy.

The CHAIRMAN. The next sentence says "the United States, however, will maintain its existing commitments regarding the use of plutonium in civilian nuclear programs in Western Europe and Japan" and that is administration policy. We will honor those commitments, or is that being——

Mr. CURTIS. The phrase, again, derives from the Presidential Decision Directive, and that is the policy of this administration.

The CHAIRMAN. And that is not being reexamined or redebated within the administration.

Mr. CURTIS. That policy is not being reexamined within the administration, to my knowledge.

The CHAIRMAN. And that would be, Mr. Stratford, part of the basis for the State Department's opposition to the Markey amendment in the House, which in turn would derogate from our agreement with Japan.

Mr. STRATFORD. Essentially correct. We have an agreement with Japan. The agreement was approved by the Congress. We believe that the Markey amendment attempts to rewrite the section of the agreement unilaterally which deals with the ability to suspend programmatic consent.

The CHAIRMAN. Dr. Wilson, what do you say to those who say that the IFR is very long-term in its solution, and therefore we should not pursue it?

Dr. WILSON. Well, I would agree with them that it is long-term in its solution, and I would not now propose that we construct a reactor like EBR II, or start on that program as of today. That is not the question at issue.

We started on that program at a time when we thought nuclear energy was going to be more needed—the supplies of uranium were going to be more limited than they are now, and before we had this stockpile to get rid of. It is the discontinuation of the program we are discussing, not the possible start of the program, and the momentum for continuing the program is very important.

The signals it gives to the world if you stop a program is a signal that it will never be wanted, and we will never be interested in that subject, and I think that is a signal we must avoid giving to the rest of the world at all cost.

The CHAIRMAN. What do we get for the—I think it costs $19.3 million over the next 5 years to complete the design. What do we get from that? Will that tell us much about the workability, the practicality of the IFR?

Dr. WILSON. Well, I believe the work that is being done now is really a demonstration that you can actually do it on a fuel cycle basis rather than a paper calculation, and it is being done on a practical size, including fabrication of fuel elements and putting them in a reactor and demonstrating you can take them out, operate them in the design one wants.

I would hope within that 5 years—I have had a complaint with the whole project, and I might as well tell you that—they have been so focused on what they are themselves doing that they have not followed the rest of the world, and what the French are doing and what the Russians are doing. I would hope that their thinking can now be in collaboration with the French, with the Russians, with the Japanese, and influencing what they are doing, and the skill and experience of the people from the IFR project can be put to use to make sure that those countries in their long-term energy future follow a course which we would consider acceptable.

The CHAIRMAN. Dr. Wilson, what advice would you have to the Department of Energy on making policy with respect to this? Other than what you have said about the IFR, with which I concur, what advice would you give them as to how to proceed on this issue?

Dr. WILSON. Well, I would certainly say they must follow the Panofsky report recommendations at once, and adhere to the spent fuel standards.

I would also hope that realization that, indeed, the Russians are the most important, and of course, it is most difficult, and I would certainly think you have got to discuss with the Russians in humility and not with arrogance is absolutely fantastically important, and use all private discussions possible.

For example, in dealing with the radiological effects of Chernobyl, in dealing with reactor safety, I believe the Department of Energy has been very far from fruitful in this thing. They have been very arrogant, and it has been resented by the Russians, and I think we have got to be much more careful on that.

I would like to see, for example, the Russians do what I said. We would discuss with them what steps we can take now which can go in the right direction, whether or not it is the ultimate——

The CHAIRMAN. Should the question of reactor safety and the question of proliferation be handled in the same shop in the United States in our negotiations with Russia?

Dr. WILSON. I am not so sure. I think perhaps not, but the people should each understand what the other is involved with. The people are different in Russia on both those subjects, though they have been together in the past.

The CHAIRMAN. How would you change the way we negotiate to do away with that arrogance, or lack of negotiating skills?

Dr. WILSON. That is one of the hardest things to do, of course. I suppose—I think it has changed very considerably in the last 18 months on both reactor safety and on dealing with the effects of

Chernobyl, and the most noticeable change came at a meeting in Chicago in November 1992. Whereas up to that time people were saying, please shut down. You want safe reactors. They are going to cause a lot of trouble, and that is what I call a conversation stopper, because you were not addressing their concerns.

Mutually, everybody in the Congress agreed, the question should be, how can we help make your reactors safer, so then you can make your decisions among the reactors, and which to shut down. This is now the policy of not only the administration but all the engineers in the country, and I think that is far better, and I think we have to have that same approach on the subject of proliferation.

Mr. CURTIS. Mr. Chairman, I cannot help but ask for a clarification of the record that Dr. Wilson's comments identify a very helpful change in the last 18 months, which I would observe roughly corresponds with the duration of this administration.

The CHAIRMAN. Mr. Curtis, who is in charge of reactor safety in this administration, Russian reactor safety?

Mr. CURTIS. The Office of Nuclear Energy is supervising that program. It is being pursued with Brookhaven Laboratory and other activities.

The CHAIRMAN. This is a separate question, but I have held a couple of hearings on the fact that nobody really is in charge. Mr. Stratford would probably tell you that the Department of State is in charge, would you not?

Mr. STRATFORD. No, Senator.

The CHAIRMAN. The Department of State?

Mr. CURTIS. I took your question as asking within the Department of Energy. It is the Office of Nuclear Energy, excuse me.

The CHAIRMAN. Within the administration, that is another question, but we need to appoint someone to be in charge in this country on a high level of Russian reactor safety to coordinate all those activities, and that is not being done, in my judgment, and I wish you would take a look at that. That is another question. We have held two hearings on that.

Dr. WILSON. I wonder if I could just add a comment on that.

The CHAIRMAN. Yes.

Dr. WILSON. The Department of State—with all the rude comments about the Department of State, I must make one polite comment, and that is the European Bank for Reconstruction and Development have a reactor committee to study—they are helping the Eastern European reactors. The chairman is Adolph Birkhofer. He is a very fine man and a great expert. The State Department was asked to send a representative to that bank, and to my surprise, my pleasant surprise, they appointed Dr. Robert Budnitz, who is an independent—used to be the head of reactor safety research at the NRC and is now a private consultant. He is an outstanding person on nuclear reactor safety, and by the way, he was one of the people on a subcommittee of Dr. Panofsky's committee, and fully subscribed to Dr. Panofsky's report.

The CHAIRMAN. Well, that is excellent.

Mr. CURTIS. Senator, I think for record purposes it is appropriate to say that Liz Verville has the lead responsibility on the reactor safety issue on behalf of the administration. I know that is a matter that you have commented on before.

The CHAIRMAN. Yes, and I do not make that comment to disparage the job she has done. I just think you need somebody at a higher level. Maybe she ought to be promoted to Assistant Secretary or something, but I think she is below the level of Deputy Assistant Secretary and is coordinating all of these efforts, and it is not a high enough level to be able to make the coordinated judgments about what ought to be done, and to be able to come and ask the Congress for money if that is what is needed.

I just think—I think no one is in charge, but we have held hearings on that, and I have made my position clear on that.

Dr. Panofsky, do you have any final advice for us, the country or the Department of Energy, on this issue?

Dr. PANOFSKY. No, sir. I am very pleased that there has been really dramatically increasing interest both on the legislative side and on the executive side with getting this problem under control. I hope that since—to quote Secretary Curtis—since politics is harder than science, as much as one can unlink the problem of dealing with the excess weapons plutonium and the tritium production problem, and dealing with the long range energy future as the Nation, and as far as that is concerned, of the world, as much as one can unlink that, I think that simply the political task will be to get all of them under the most wisest consideration.

Thank you very much.

The CHAIRMAN. Well, with that parting comment, let me say, Mr. Curtis, we are putting great stock in you because we have great confidence in your ability to unlink the politics and the policy and the science and the national interest of this and reassemble them in the proper order, and it is a matter that has been neglected, and it is a matter that needs, I believe, your good attention and judgment, and I know it will receive that.

I hope we will not allow these issues to atrophy between now and 1996. I fear that that is happening.

Some issues are a little bit radioactive politically. You do not want to touch them. One of those has been Yucca Mountain. One of those has been the WPPSS reactors. Others, the whole issue has been sort of, let us put it off and do not talk about it.

Each of these issues is getting more and more time-sensitive, more and more difficult, and reaching crisis proportions in my judgment, and we need to make some of those tough political judgments.

As I say, I have confidence that you can lead us in the right direction on that.

Gentlemen, thank you very much. This has been an excellent panel.

Mr. CURTIS. Mr. Chairman, may I add one thing?

The CHAIRMAN. Yes.

Mr. CURTIS. I thank you for those kind comments, but I would like to note not only Secretary O'Leary's but also my great admiration for the work that Dr. Panofsky has provided in this report to bring the scientific judgment and the consensus judgment together on this important issue, and to state the conclusion so clearly is a great public service, and I think he has helped us immeasurably in this undertaking.

The CHAIRMAN. I certainly concur in that, and I know the country does, Dr. Panofsky.

Thank you very much.

[Whereupon, at 12:38 p.m. the hearing was adjourned.]

APPENDIXES

APPENDIX I

Responses to Additional Questions

DEPARTMENT OF ENERGY,
CONGRESSIONAL AND INTERGOVERNMENTAL AFFAIRS,
Washington, DC, July 1, 1994.

Hon. J. BENNETT JOHNSTON,
Chairman, Committee on Energy and Natural Resources, U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: On May 26, 1994, Charles B. Curtis, Under Secretary of Energy, testified regarding plutonium disposition.

Enclosed are the answers to questions submitted by you, Senators Bumpers, Craig and Lott. The remaining six answers are being prepared and will be forwarded to you as expeditiously as possible.

If we can be of further assistance, please have your staff contact our Congressional Hearing Coordinator, Barbara Campbell, on (202) 586-8238.

Very truly yours,

WILLIAM J. TAYLOR III,.
Assistant Secretary.

[Enclosures.]

RESPONSES TO QUESTIONS FROM SENATOR BUMPERS

Question 1. Considerations of cost and timeliness would seem to argue in favor of using proven, existing technologies for plutonium disposition. The National Academy of Sciences recommended two technologies: (1) burning plutonium in combination with uranium fuel in existing nuclear reactors and (2) mixing plutonium with high-level nuclear waste and vitrifying the material. Given the urgency and nature of the situation, do you believe it is appropriate to consider other technologies which have not even advanced beyond the R&D state and whose development would be extremely costly to the taxpayers?

Answer. The two technologies mentioned above are methods to achieve the "spent fuel standard" in which the plutonium is made as inaccessible for weapons use as the plutonium in spent fuel from commercial power reactors. The National Academy of Sciences also recommended investigating deep borehole disposal.

Because plutonium disposition alternatives that involve meeting the "spent fuel standard" result in placing plutonium in a form that still entails a risk of weapons use, and because the barriers to use diminish with time as the radioactivity decays, the Department considers it prudent to investigate technologies that go beyond the spent fuel standard by making the plutonium essentially inaccessible or destroying it.

Among the factors to be evaluated in selecting preferred alternatives will be the technical risk, cost of implementation including the cost of research and development, and the time to start implementation. Thus, alternatives with an inordinate amount of research and development may not rank high against the selection criteria.

Question 2. The NAS study recommended that weapons plutonium should be converted into spent nuclear fuel or another final form with proliferation resistance equivalent to spent fuel. Do you agree with this recommendation? Is this "spent fuel standard" sufficient from a nonproliferation and arms control perspective, or is it necessary to pursue the expensive and time-consuming process of near complete destruction of plutonium?

Answer. Because plutonium disposition alternatives that involve meeting the "spent fuel standard" result in placing plutonium in a form that still entails a risk of weapons use, and because the barriers to use diminish with time as the radioactivity decays, the Department considers it prudent to investigate technologies that go beyond the spent fuel standard by making the plutonium essentially inaccessible or destroying it.

The Department has made no decisions on which alternatives to select. However, the Department does consider it prudent and reasonable to examine some alternatives that go beyond the "spent fuel standard" to determine the difference in technical risk, cost, schedule, and proliferation resistance of a range of alternatives.

Question 3. Wouldn't a mixed-oxide program for plutonium disposition encourage civilian plutonium programs abroad and promote a domestic plutonium industry?

Answer. The use of mixed oxide fuel in commercial power reactors as a means of plutonium disposition would be a once-through process without reprocessing or recycling the spent fuel. The United States would be taking plutonium previously separated for weapons purposes and would be converting it to spent nuclear fuel. Since spent fuel reprocessing would not be used, this approach would not encourage civilian plutonium programs abroad nor would it encourage a domestic plutonium industry.

Question 4. What are the regulatory obstacles to the disposition of plutonium as MOX fuel? Would the Generic Environmental Impact Statement for Mixed Oxide Fuels proceeding have to be reopened? What period of time would be required to resolve the regulatory obstacles? How do these obstacles compare with those associated with vitrification?

Answer. The Department has initiated the preparation of a programmatic environmental impact statement (PEIS) to evaluate alternatives for long-term storage of all weapons-usable fissile materials and disposition of weapons-usable fissile materials declared surplus to national defense needs by the President. Prior analysis, such as the Generic Environmental Impact Statement for Mixed Oxide Fuels, will be utilized as input.

The regulatory issues associated with each disposition alternative will be identified and evaluated For example, an existing commercial power reactor may require a license modification from the Nuclear Regulatory Commission (NRC) to use mixed oxide fuel. A mixed oxide fuel fabrication facility may also require NRC licensing. The repository impacts of the spent fuel form also will need to be evaluated.

The comparison of regulatory issues will be completed as part of a record of decision following completion of the PEIS. The record of decision is scheduled to be issued in the Spring of 1996.

Question 5. What are the technical obstacles for using vitrification as a means of plutonium disposition? What research is being conducted on vitrification? What is the timeline for demonstrating the feasibility of vitrification?

Answer. Technical obstacles for using vitrification, or other immobilization technologies for plutonium disposition, include:

- the amount and concentration of plutonium that can be suspended in the matrix material (glass or ceramic);
- criticality control considerations;
- the ability to dissolve plutonium metal directly in the matrix; and
- the extent to which the spent fuel standard could be met with existing high level waste.

These issues are being studied. Since most research and development on immobilization technologies in the past involved high-level waste and not direct disposition of plutonium, some experimental work may be required. This research and development program will be formulated as part of the output of the present study.

The timeline for decisions on plutonium disposition is paced by the National Environmental Policy Act (NEPA) process and is planned to result in decisions in the spring of 1996.

Question 6. Is the Interagency Working Group on Plutonium Disposition utilizing the spent fuel standard as a criterion?

Answer. Yes. The Interagency Working Group on Plutonium Disposition is using as its starting point the National Academy of Sciences report, Management and Disposition of Excess Weapons Plutonium. In its report, the Army identified standards for managing the proliferation risks associated with surplus weapons plutonium. It recommended the "spent fuel standard" in which the plutonium is made as inaccessible for weapons use as plutonium in spent fuel from commercial power reactors.

Question 7. Supporters of the Liquid Metal Reactor program argue that it would cost more money to terminate the program now than it would be to continue. In light of the fact that the LMR program will cost the government an additional $3.4 billion, do you believe that the argument made by supporters of the program is valid?

Answer: We believe that the argument of the supporters is not valid. The Department has recently estimated that between 1995 and 2010, $3.2 billion of Federal funds would be required to complete Advanced Liquid Metal Reactor (ALMR) design and development, Integral Fast Reactor metal fuel cycle development, Light Water Reactor actinide recycle development, and to construct a prototype ALMR powerplant. The $3.2 billion does not include facilities shutdown and decommissioning costs or personnel termination costs which would ultimately be incurred even with completion of the program. These costs are likely to be higher than termination of the program beginning in FY 1995 which would require approximately $0.3 billion between FY 1995 and FY 1998. Therefore a net savings of at least $3.2 billion over a 15-year period will be realized by immediately terminating the program.

Question 8. Given the estimates that uranium prices will continue to be relatively low for the next 50 years, why would any utility company want to use mixed-oxide fuel in its nuclear reactors or construct liquid metal reactors?

Answer. We agree that no utility company would on its own volition be interested for the foreseeable future in the use of mixed-oxide fuel for power generation purposes, nor in constructing a liquid metal reactor. However, such fuel may be of interest to the United States and other governments for the limited purpose of disposition of excess stocks of existing, separated plutonium. If such disposition were to take place in utility reactors, the government(s) involved would have to provide sufficient support to make the burning of such fuel in commercial reactors acceptable to the utility owners of the reactors.

Question 9. The U.S. has helped to develop many of the advanced materials accounting and safeguard measures for Japan's plutonium fuel fabrication facility. Given the anticipated increase in plutonium commerce in the next few years, stringent and effective implementation of IAEA safeguards is more important than ever. How can the goal of greater "transparency" for civilian plutonium programs be achieved if information about safeguards problems is treated as "safeguards confidential" and is not made public?

Answer. Transparency of member states' civilian nuclear programs is an International Atomic Energy Agency (IAEA) objective, but the IAEA necessarily must pursue this objective within the parameters established by its members.

The Board of Governors of the IAEA gives the Safeguards Department the authority to protect any data that has to do with proprietary information, which must be maintained in a confidential manner. The IAEA has a specific list of documents considered safeguards confidential. These documents are generally routine documents and may include information related to design or movement of materials and conclusions about what is happening in a facility or a state. Such confidentiality is a necessary condition for the transparency managed under IAEA auspices.

Typically what is classified as safeguards confidential is proprietary information or data on transfer of nuclear materials. In addition, there are several instances in which documents could be classified safeguards confidential, including: 1) documents provided by a member state which requests that they be kept confidential, 2) highly sensitive information, and 3) documents as determined by the IAEA Deputy Director-General of Safeguards, Safeguards Division Director, or safeguards classification officer as needing to be safeguards confidential.

Information on issues or "problems" within member states is reported to the IAEA to be handled and solved. The IAEA has a responsibility to member states not to compromise proprietary information that is potentially contained in documentation of "problems." The IAEA can only release material deemed safeguards confidential if the country concerned has agreed.

The process of classifying documents safeguards confidential was reviewed by the Board of Governors three years ago and determined to be the appropriate mechanism for protecting proprietary information.

The goal of transparency of the member states' civilian nuclear programs continues to be an IAEA objective in the context of sustaining access and performing their auditing and inspection functions. The IAEA promotes transparency between a particular member state and the IAEA, not transparency between two member states. Additionally, the IAEA has no capability to order a member state to be transparent to the public of that member state. That would be a matter of domestic law. The "Programme 93+2" initiative at the IAEA focuses on an expanded safeguards regime to "provide assurance regarding both the correctness and the completeness of a state's nuclear programme declaration." The objectives outlined under 93+2 are aimed at making member states even more responsible and forthcoming to the IAEA in declarations of their nuclear activities.

RESPONSES TO QUESTIONS FROM SENATOR WALLOP

Question 1(a). Your testimony indicates that you will initiate a comprehensive review of long-term options for plutonium disposition taking into account technical, nonproliferation, environmental, budgetary and economic considerations. You also indicated that you will utilize and rely on recent studies that address this issue. The OTA Report pointed out that it will take decades to determine and implement a policy for disposition of this material. The research on the IFR technology, in which we've already invested over a billion dollars over the years and which could contribute to the plutonium disposition effort, can be completed for roughly the same amount as it will cost to terminate it. In fact, with the participation of the Japanese, the research and termination can be completed for less than the cost of termination alone.

How can the Administration possibly justify a decision to terminate the program under these circumstances instead of completing the IFR proof-of-concept demonstration program when it is cheaper to do so and when the termination can still be accomplished by the same date?

Answer. It is not the case that the cost of terminating the IFR program after the completion of the research will cost less than if the program were terminated beginning in FY 1995. The Administration proposal to cancel the IFR program is based on public policy goals as well as economics. We believe that as a matter of policy the Federal government should not spend additional public monies on a reactor design that relies on the use and recycle of plutonium. Completion of ALMR development would cost nearly $3.2 billion between 1995 and 2010.

The $3.2 billion does not include facilities shutdown and decommissioning costs or personnel termination costs which would ultimately be incurred even with completion of the program. These costs are likely to be higher than termination of the program beginning in FY 1995 which would require approximately $0.3 billion between FY 1995 and FY 1998. Therefore a net savings of at least $3.2 billion over a 15-year period will be realized by immediately terminating the program.

Question 1(b). I am told that the Secretary, in fact, originally accepted the offer of participation by the Japanese and later reneged on it. Has the Department told the Japanese that the U.S. is discontinuing the IFR program and that we do not want their money?

Answer. A series of discussions were initiated in the summer of 1993 between the Department's Office of Nuclear Energy and PNC regarding the scope and cost of a collaborative arrangement on actinide recycle. The discussions conducted by the Office of Nuclear Energy anticipated that a formal agreement would be signed at the end of January 1994.

The Secretary, in a meeting with Mr. Ishiwatari, President of the Japanese Power Reactor and Nuclear Fuel Development Corporation (PNC), expressed interest in a joint development program on actinide recycle of spent reactor fuels. In late February, 1994, however, in conformance with the Administration's policy against civilian plutonium reprocessing, the Secretary wrote to President Ishiwatari and to Science and Technology Minister Ida and informed them of the Department's intent to terminate the U.S. Actinide Recycle Program.

Question 1(c). There is no justification for terminating the IFR and GT-MHR when both are recognized by every major study of this issue as options for long-term disposition of plutonium. Other than your statement that the termination decision was driven by the administration's non-proliferation policy, what specifically is the rationale for the Department's proposal to eliminate its long-term disposition options before it even completes an analysis of the problem?

Answer. The Administration's decision to recommend to Congress the termination of the Gas Turbine-Modular Helium Reactor (GT-MHR) and the Integral Fast Reactor (IFR) programs is based on the Administration's decision to curtail long-term nuclear power research and development, and to focus on the near-term development of Advanced Light Water Reactors.

2. Please provide the names of all employees (career as well as schedule C), consultants and advisers within DOE headquarters offices who have been hired or retained since January 20, 1992, at a pay rate of $70,000 per year or higher, each person's title, job description and two most recent places of employment prior to working at the Department.

Answer. Not received at the time the hearing went to press.

RESPONSES TO QUESTIONS FROM SENATOR CRAIG

Question 1. You referred to the closure of Russian reactors that are fueled with plutonium. It is my understanding that these reactors were military production reactors. Is that correct?

Answer. The Russians had 13 reactors dedicated to the production of plutonium for military purposes. These reactors were fueled with uranium, however, not plutonium. Ten of these already have been shut down. The three remaining reactors, two at Tomsk and one at Krasnoyarsk, provide process heat and electricity to both the sites and nearby cities. The negotiations for the shut down of these remaining reactors were being pursued under the auspices of the Gore-Chernomyrdin Commission and seek to ensure that any associated plutonium will not be used for military purposes.

Question 2. Precisely what reactors have the former Soviet Union nations closed and what have these closures contributed to the overall plutonium reserves of those nations?

Answer. All the power reactors supplied by the Soviet Union to its former bloc allies remain in operation or will be returned to service, except those in the former East Germany and Chernobyl Unit 4. They fall into three categories: the RBMK (Chernobyl type); the VVER-44O; and the VVER-1000. All generate reactor grade plutonium from their operation, but whether it is reprocessed depends on many factors. RBMK fuel is not reprocessed; VVER-44O-fuel has been reprocessed at the RT-1 facility in Chelyabinsk, but the ability of the former bloc countries to pay for this service varies; VVER-1000 fuel can only be stored and not reprocessed at this time.

Question 3. In Russia, by your best estimation, how many commercial reactors are still operating?

How many burn plutonium?

What is the current reprocessing infrastructure to separate plutonium?

Answer. In Russia, there are 29 reactors producing electrical energy, but there are a number of special purpose reactors (e.g., research, critical assemblies) that are being used for commercial purposes—i.e., production of medical and industrial radioisotopes.

Outside of the Russian breeder reactor program, there are no reactors fueled with plutonium.

Russia has operational reprocessing facilities at three sites. At Chelyabinsk, the RT-1 reprocesses fuel from the VVER-440 reactors, the naval nuclear program, and other special purpose reactors. At Tomsk and Krasnoyarsk, plants reprocess fuel from the three production reactors. Also at Krasnoyarsk, the RT-2 is a large, but unfinished reprocessing plant that would handle VVER-1000 fuel.

RESPONSES TO QUESTIONS FROM SENATOR LOTT

Question 1. What is the view of the Department of Energy concerning the risk to the U.S. of the current plutonium situation in Russia? Shouldn't the program, account for, secure, and dispose of nuclear weapons, be treated with the same urgency as the Manhattan Project?

Answer. The United States is very concerned about plutonium stockpiles in Russia, and has undertaken a comprehensive approach to the growing accumulation of fissile material from dismantled nuclear weapons and within civil nuclear programs. The United States has established a close relationship with Russia in addressing these urgent problems. At the summit between President Clinton and President Yeltsin, the two agreed to cooperate on measures to prevent the accumulation of excessive stocks of fissile materials and over time reduce these stocks. At their direction, the United States and Russia have convened working groups to develop steps to ensure the transparency and irreversibility of the process of reduction of nuclear weapons, and study options for the long-term disposition of fissile materials, particularly plutonium. We are pursuing such control and disposition measures as rapidly as possible, given the necessity for agreement by Russia on how to proceed and their perspective on plutonium as a valued asset rather than a liability.

Question 2. Is the Administration dealing with the issue as a serious national security problem or as just another nuclear waste problem? Who in the Administration is responsible if there is a diversion of plutonium in Russia as a result of inaction on the part of the Administration?

Answer. The issue of safeguarding plutonium is always regarded as among the highest national security concerns. The priority that this Administration has placed on non-proliferation attests to this. The Department of Energy, for example, has sought with considerable success to negotiate with Russia the shutdown of reactors at Tomsk and Krasnoyarsk and obtain assurances that the excess plutonium would not be used for military purposes.

Responsibility for the control of Russian plutonium lies with the Russian Federation, which is formally committed to this responsibility as a signatory of the Nonproliferation Treaty. Although we cannot directly intervene in the actions of Russia, the United States and the international community support this commitment by offering assistance to better control and account for fissile materials in all of the former Soviet Union. Examples of U.S. support Include material control and accounting (MC&A) assistance under Nunn-Lugar legislation and laboratory-to-laboratory exchanges on MC&A, among others.

Question 3. When will the Department of Energy be ready to make a definitive decision on the disposition of excess weapons grade plutonium and actually commence a program (not, study) to start destroying these materials? What can be done to expedite this process?

Answer. The Department is preparing a Programmatic Environmental Impact Statement (PEIS) to evaluate alternatives for long-term storage of all weapons-usable fissile materials and disposition of weapons-usable fissile materials declared surplus to national defense needs by the President. This PEIS process, which includes substantial public input, will take about two years leading to a record of decision (ROD) in the spring of 1996.

The National Academy of Sciences in its report entitled, *Management and Disposition of Excess Weapons Plutonium* noted that, "It is important to begin now to build consensus on a roadmap for decisions concerning long term disposition of excess weapons plutonium. Because disposition options will take decades to carry out, it is critical to develop options that can muster a sustainable consensus". The Department is committed to complete its work as expeditiously as possible while assuring appropriate participation and input from the public and elected official which will be essential to obtaining such a sustainable consensus.

Question 4. What is the viability of implementing a program for securing, safeguarding, and destroying excess plutonium in Russia without parallel and reciprocal activities in the U.S.?

Answer. The United States is committed to cooperating with Russia in addressing the control and disposition of plutonium, and reciprocity is a key aspect of that cooperation. As part of the material control and accounting program with Russia, the United States has proposed to host reciprocal visits to the plutonium facilities at the Hanford Site in the United States and the Mayak installation in Russia to demonstrate material control and accounting practices. In an attempt to enhance the transparency and irreversibility of dismantlement; the United States and Russia have agreed to host reciprocal inspections by the end of 1994 to facilities storing plutonium removed from nuclear weapons. Cooperative efforts will continue as U.S. and Russian experts convene a joint working group to study options for the long-term disposition of fissile materials, particularly plutonium.

Question 5. What is the viability of accomplishing all these activities in Russia in the absence of a comprehensive approach involving significant financial assistance?

Answer. The United States has undertaken a comprehensive approach to the growing accumulation of fissile material from dismantled nuclear weapons and within civil nuclear programs. Key elements of this approach include ensuring the highest standards of control of fissile materials, limiting the stockpiling of these materials, and developing long-term options for the disposition of these materials. There will be significant costs associated with implementing these steps, some of which are addressed by assistance programs such as Nunn-Lugar, some through laboratory-to-laboratory cooperation and some through the International Science and Technology Center in Russia.

RESPONSES OF MR. STRATFORD TO QUESTIONS FROM SENATOR CRAIG

Question 1. This week a leader of the South Korean opposition party (a candidate for mayor of Seoul) called for development of a reprocessing plant to meet plutonium needs of South Korea's future plutonium fueled reactors. He also noted this would give the South Koreans more bargaining power in security issues.

It appears South Korea is considering expanding their use of plutonium as nuclear fuel. Can you confirm this apparent direction of expanding use of plutonium in South Korea?

If the Administration's policy is to limit the use of commercial plutonium reactors, would not it be a wiser policy to develop an advanced reactor that could consume plutonium rather than have nations continue to separate plutonium from spent fuels?

Answer. No, we do not believe that South Korea is moving to expand the use of plutonium as nuclear fuel. South Korean officials do from time to time express an interest in pursuing reprocessing as a means of closing the nuclear fuel cycle. However, this is not the policy of the Government of Korea. South Korea understands fully the U.S. view regarding reprocessing, and that the U.S. would not give consent for the reprocessing on the peninsula of U.S.-origin or derived nuclear material. This position has been expressed clearly and often in our ongoing discussions with diplomatic and nuclear officials in the Korean Government. Moreover, South Korea is a party to the agreement with North Korea to forego enrichment and reprocessing on the peninsula.

With respect to "plutonium burners," i.e. reactors designed to utilize mixed oxide or other types of fuel for the purpose of disposing of separated plutonium, these options are being considered in the context of the Department of Energy's evaluation of the options for disposing of plutonium derived from dismantled nuclear weapons. We would note, however, that if there is no reprocessing of South Korean nuclear material, there would be no separated plutonium, and hence no need for a plutonium-burning reactor.

APPENDIX II

Additional Material Submitted for the Record

THE UNDER SECRETARY OF ENERGY,
Washington, DC, June 9, 1994.

Hon. J. Bennett Johnston,
Chairman, Committee on Energy and Natural Resources, U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: On May 26, 1994, I testified before your Senate Energy and Natural Resources Committee regarding the Department of Energy's Plutonium Disposition Program. During the hearing, a question was raised concerning the status of the Department's agreement with Japan's Nuclear Reactor and Fuel Development Corporation (PNC) on their proposed $60 million contribution to the Actinide Recycle Program.

A series of discussions were initiated in the summer of 1993 between the Department's Office of Nuclear Energy and PNC regarding the scope and cost of a collaborative arrangement on actinide recycle. This collaboration was to be in addition to earlier cooperative programs with Japan's Central Research Institute of Electric Power Industries, the Japan Atomic Power Company, and MITSUI that collectively totaled $26 million for the period 1990 through 1995. The discussions conducted by the Office of Nuclear Energy anticipated that a formal agreement would be signed at the end of January 1994. In the meantime, the Administration decided to terminate the program. As a result the agreement with the Japanese to expand the collaboration was never consummated.

In February 1994, the Secretary of Energy sent letters to the President of Japan's Nuclear Reactor and Fuel Development Corporation and to the Minister of the State Science and Technology Agency notifying them that the Department was proposing termination of the Actinide Recycle Program at the end of FY 1994. I have enclosed copies of the Secretary's letters and a chronology of events leading up to these letters.

Please let me know if you have any further questions on this matter or if you require other information.

Sincerely,

CHARLES B. CURTIS.

[Enclosures.]

THE SECRETARY OF ENERGY,
Washington, DC, February 24, 1994.

Mr. TAKAO ISHIWATARI,
President, Power Reactor and Nuclear Fuel Development Corporation, 9-13, 1-chome Akasaka, Minato-ku, Tokyo, Japan.

DEAR MR. ISHIWATARI: During the last year, we have discussed possible collaboration in the Department of Energy's Actinide Recycle Program that includes research into the feasibility of recycling spent nuclear fuel from light water reactors into fuel for-liquid metal cooled reactors.

We are most appreciative of the cooperative spirit with which these discussions have been held, a spirit that is typical of the many joint undertakings between the Department of Energy and the Power Reactor and Nuclear Fuel Development Corporation over the past 25 years. I am particularly appreciative of the effort that you personally have devoted to this project.

As you know, the Actinide Recycle Program has been the subject of considerable controversy here, and we have had extensive program discussions while making decisions regarding our fiscal year 1995 budget submission. The purpose of this letter is to confirm that as a result of those discussions, we have proposed to Congress that the program be terminated as of the end of fiscal year 1994. I had intended to inform you directly of this decision prior to its being announced. Unfortunately, due to the logistics of my travel to the Ivory Coast to lead the United States delegation to the funeral of President Houphouet-Boigny, the call could not be made. I apologize for any inconvenience this may have caused.

I sincerely hope our decision does not create a significant problem for you, and we will continue to have many other opportunities for fruitful cooperation.

Sincerely,

HAZEL R. O'LEARY.

CHRONOLOGY OF ACTINIDE RECYCLE (AR) NEGOTIATIONS WITH JAPAN'S NUCLEAR REACTOR AND FUEL DEVELOPMENT CORPORATION (PNC)

Summer 1993 ..	The Department's Office of Nuclear Energy (NE) and PNC met to discuss possible cooperation on the Actinide Recycle Program.
September 1-3, 1993.	PNC and NE met at Argonne National Laboratory (ANL) to exchange draft Statements of Work.
October 21, 1993.	NE and PNC met at ANL to discuss a draft Specific Memorandum of Agreement (SMA).
November 5, 1993.	NE and ANL met with PNC in Tokyo to discuss funding contributions proposed by the Japanese for the Actinide Recycle Program.
November 10, 1993.	Secretary O'Leary met in Washington with President Ishiwatari of PNC regarding the potential for collaboration on the Actinide Recycle Program.
December 1, 1993.	NE and ANL met with PNC in Tokyo to further refine the SMA.
December 16, 1993.	NE, ANL, and PNC met in Washington and informally agreed on a $60 million contribution by PNC to the Actinide Recycle Program.
Mid-January, 1994.	As part of the review of the Department's proposed FY 1995 budget, the Administration determined that continuation of the Actinide Recycle Program would not support the new policy on non-proliferation.
February 7, 1994.	The U.S. Embassy in Tokyo notified PNC and the Japanese Science and Technology Agency of the Administration's proposal to discontinue work on the Actinide Recycle Program beginning in FY 1995. NE representatives briefed the PNC Washington Office and a Japanese Embassy representative on the proposal in parallel with the Secretary's press briefing on the FY 1995 budget.
February 24, 1994.	Secretary O'Leary sent letters to Mr. Ishiwatari of PNC and Minister Eda of Japan's Science & Technology Agency (STA) expressing the Administration's plans to terminate the Actinide Recycle Program.

STATEMENT OF JOHN H. GIBBONS, ASSISTANT TO THE PRESIDENT FOR SCIENCE AND TECHNOLOGY

Thank you for the opportunity to submit testimony on the problem of dealing with the vast stockpiles of plutonium and highly enriched uranium (HEU) which, with the end of the Cold War, have become excess to military needs. Nothing could be more central to our security than making sure this material does not fall into the wrong hands.

This is one of the most challenging policy problems I have come across, weaving together issues of technology, security, environment, energy, and international politics. To integrate the varied aspects of the problem, we need careful management, high-level oversight, and well-informed congressional and public input.

Over the past several months, this Administration has developed a comprehensive strategy for dealing with the plutonium problem, built on four pillars: securing nuclear materials against theft or diversion; building confidence through openness; halting further accumulation of excess stocks; and carrying out long-term disposition of these fissile materials. All of the many initiatives now underway fit together into this four-part structure. This week in Moscow, the United States and Russia have made major progress in broadening our discussions and cooperation in each of these four areas.

Before I describe our strategy and initiatives in more detail, however, let me first outline the scale of the problem we have.

The HEU part of the problem is technically straightforward: excess HEU can be blended with other uranium to make low-enriched reactor fuel that cannot be used in nuclear weapons, and is a valuable product for sale on the commercial market. As you know, Russia and the United States have signed a purchase agreement under which the United States will purchase low-enriched fuel blended from 500 tons of excess HEU. In January, President Clinton, Russian President Yeltsin, and Ukrainian President Kravchuk signed an agreement under which Ukraine will receive a share of the proceeds of the HEU purchase agreement in the form of low-enriched fuel for its reactors, in return for shipping the nuclear warheads now on its soil to Russia for dismantlement. That arrangement is already being implemented: several trainloads of nuclear warheads have already arrived at Russian dismantlement facilities, and shipments of nuclear fuel have been sent to Ukraine in return. Some hard work remains to be done before Russia can begin blending HEU and shipping low-enriched material to the United States, particularly in completing the transparency arrangements and assuring that the product we are buying meets specifications. But we are hard at work on doing just that, and we are making progress.

A SECURITY LIABILITY

Excess weapons plutonium is much more problematic. It cannot be made proliferation-resistant by blending it with other isotopes, as one can with uranium, and reactor fuel made from it is too expensive to compete on the civilian fuel market.

With the ongoing dismantlement of tens of thousands of nuclear weapons, the United States and Russia will each have dozens of tons of excess plutonium—and just a dozen pounds is enough for a nuclear bomb. Dealing with this huge excess stock will be hard enough in the United States; Russia must face this daunting challenge in the midst of continuing political and economic turmoil. As a recent National Academy of Sciences (NAS) report warned, this excess material poses a "clear and present danger" to international security.

The plutonium problem does not stop there. We also have to worry about excess plutonium chemically separated from civilian spent fuel. There are already almost 100 tons of this civilian separated plutonium—which can also be used in nuclear explosives—around the world today, and more is building up all the time. This plutonium was originally intended to be fuel for breeder reactors that now will not be built for decades—if ever.

Finally, there are hundreds of tons of plutonium in spent fuel from civilian nuclear power plants all over the world. But that plutonium poses much less security risk than separated plutonium, because the spent fuel's radioactivity makes it difficult to extract the plutonium for use in bombs. Plutonium that has been chemically separated from the intensely radioactive fission products in spent fuel—including both weapons plutonium and civilian plutonium—is far easier to handle and make bombs from.

The Academy study recommended that the United States and Russia move with all deliberate speed to make it as difficult to make bombs out of the excess separated plutonium as it is to make bombs out of the plutonium in spent fuel. Then the excess plutonium we are now trying to cope with could become, in effect, one small part of the larger global problem of disposal of spent fuel and other nuclear wastes. That is also a big problem, but it is one we know we must solve in any case.

AN ECONOMIC LIABILITY

Contrary to some claims, there is no money in plutonium—except, perhaps, on the nuclear black market. Making reactor fuel from plutonium is so expensive that the fuel cannot compete with uranium fuel, even if the plutonium itself is "free." Like oil shale, plutonium has energy locked inside; but the cost of getting that energy out is more than the energy is worth in today's market.

Therefore, anything we do with our excess weapons plutonium will cost money. But, given the stakes, we must view that expense as an investment in security, just as we once viewed the cost of its production as vital to our security.

AN ENVIRONMENTAL LIABILITY

Finally, plutonium is not only an economic, but also an environmental liability, thousands of times more toxic than uranium. This administration is making protection for health, safety, and the environment a fundamental requirement of our plutonium storage and disposition activities. I am convinced that we can develop approaches that will allow us to achieve our critical security goals and meet stringent environmental and safety standards at the same time.

AN URGENT PROBLEM

Given the security stakes, we cannot afford unnecessary delay. Simply storing this material in forms that could readily be turned back into nuclear weapons would not create the irreversible arms reductions we have committed to seek. And it would mean leaving the material in a form that would be comparatively easy to carry off if there were ever a breakdown in security.

Unfortunately, while disposition of plutonium is an urgent task, the reality is that it will take decades to accomplish. I am reminded of the French marshal who, after learning that it would take 30 years for trees to grow along the boulevard leading to his estate, told his gardener that he had better start planting tonight, rather than waiting until tomorrow.

In setting our policy course, we must keep in mind that while our own excess plutonium poses little direct security risk, the actions we take in managing it will have a major impact on the international scene. What we do with our plutonium in the United States will inevitably affect what Russia does. And what we do with the basic building blocks of our Cold War nuclear arsenal will inevitably affect how other countries manage their plutonium, and how they view our seriousness about arms reductions and nonproliferation.

That, in brief outline, is the challenge before us. Now let me outline what this administration proposes to do about it.

As I mentioned, our strategy is built on four pillars: securing nuclear materials, building confidence through openness, halting further accumulation, and carrying out ultimate disposition. Each of these pillars supports the others; without any one of them, the structure would not stand.

TASK I: SECURING NUCLEAR MATERIALS

First, and most urgently, we are working to remove opportunities for bomb materials to end up on a nuclear black market. Many of you, I'm sure, have heard alarming reports of the rise of organized crime in Russia, and the potential threat to security for nuclear materials such activities could pose. As President Clinton and President Yeltsin agreed at their January summit, preventing theft or diversion of weapons-usable materials is a high priority. Let me assure you unequivocally: this administration will not be satisfied until we have taken every practical step available to us to cooperate with Russia in achieving that objective.

So, as I mentioned, we are buying 500 tons of HEU from Russia, blended down to a form that no longer poses a proliferation risk; we are helping Russia with a safe, secure storage site for other fissile materials, with groundbreaking now planned for this summer; and we have proposed a new initiative, known colloquially as the "quick fix" approach, to help Russia rapidly find and fix any urgent security and accounting problems that may exist in its far-flung nuclear complex. That initiative is under an agreement with the Ministry of Atomic Energy (MINATOM), though we have made clear that Russia's nuclear regulatory agency must also be included. In addition, we have identified opportunities to cooperate with those nuclear regulators in upgrading security accounting for weapons-usable materials at the many civilian facilities not controlled by MINATOM. Additional Nunn-Lugar assistance is being provided to Belarus, Kazakhstan, and Ukraine for material control and accounting and physical protection for nuclear materials, and we are working with the International Atomic Energy Agency (IAEA) to identify and address any problems that may exist in these areas in other former Soviet states.

The surest way to eliminate the risk that nuclear material might be stolen from a particular site is to remove the material. So we are also working with Russia to reduce the number of civilian sites handling weapons-usable materials. We are initiating a program to assist in the conversion of Soviet-designed research reactors from weapons-usable HEU fuel to proliferation-resistant low-enriched fuels. In discussions in Moscow this week, the Russian side made clear their strong interest in this endeavor, particularly in converting those reactors the Soviet Union exported, to countries including Libya and North Korea. At the same time, as President Clinton announced last fall, we are eager to purchase excess stocks of HEU that may exist in the former Soviet Union and elsewhere; we are actively pursuing a number of such purchases in the former Soviet states, which, if successful, will eliminate the proliferation risks posed by materials at several important locations.

As FBI Director Freeh announced May 25, the FBI is opening an office in Moscow to cooperate with Russia in combatting organized crime, which will be an additional focus of effort in reducing this critical proliferation risk. We are encouraging our national laboratories to pursue laboratory-to-laboratory cooperation in improving safeguards and security for nuclear materials, and some cooperative efforts are now beginning. The International Science and Technology Center in Moscow has approved a cooperative program between MINATOM and Russia's nuclear regulatory agency to develop safeguards for plutonium reprocessing—one of the most difficult safeguards tasks—at the Tomsk-7 site, home to two operating military plutonium-production reactors and a large reprocessing plant. We are working this problem hard, and I expect additional initiatives will be announced in the weeks to come.

TASK II: BUILDING CONFIDENCE THROUGH OPENNESS

Second, we are building confidence through openness. This means bilateral openness with Russia; openness to the public, to build public trust, which has been a fundamental part of this Administration's approach since it's earliest days; and international openness.

You have to know how big a problem is before you can solve it, so we have proposed that the United States and Russia share comprehensive information on their stocks of plutonium and HEU. We have made a first step by unilaterally declaring how much weapons plutonium we have produced. In March, we agreed with Russia that the two countries would begin monitoring the storage sites for components from dismantled nuclear weapons, and would work out a bilateral inspection regime to confirm the stockpiles of excess plutonium and HEU resulting from dismantlement. Two weeks ago, U.S. and Russian technical experts agreed that initial familiarization visits would begin in July, with full-blown inspections to begin by the end of the year. We are also taking steps to submit U.S. excess materials to fully international IAEA inspections, and in January, Russia agreed to consider doing the same; the initial bilateral monitoring will provide valuable experience toward that end.

Over the past few days in Moscow (May 23-26), the United States and Russia initiated a joint working group on "transparency and irreversibility" of nuclear arms reductions, as called for by President Clinton and President Yeltsin at their January summit. We reached agreement on a broad mandate to develop measures to meet that objective. Back at home, we are working to develop an integrated transparency strategy that will guide all our transparency efforts, and we expect to have that strategy completed soon. We seek to build a lasting structure of openness that builds confidence that nuclear weapons are being dismantled, plutonium and HEU are secure, and excess materials are not being used for new nuclear weapons.

TASK III: HALTING ACCUMULATION OF EXCESSIVE STOCKS

Third, we are working with Russia to turn off the spigot—to stop the accumulation of more excess plutonium and HEU. In March, we reached an agreement with Russia under which they will shut down their military plutonium production reactors. We will help them find financing to replace the heat and power these reactors now provide. We also agreed that the material produced in the meantime will not be used for new weapons. This week in Moscow, I understand that our negotiators are making important progress toward turning these accords-in-principle into formal agreements, under which these reactors would be shut down irrevocably by the year 2000, or sooner if alternate energy sources become available; the plutonium produced between now and then would not be used for nuclear weapons; and measures would be developed to confirm compliance with these obligations. These agreements will be the first steps toward the global treaty we have proposed, designed to end mankind's production of these dangerous fissile materials for weapons forever.

At the same time, we will work with Russia and other countries to limit the accumulation of excessive stockpiles of plutonium in civilian nuclear programs. This plutonium too can be used in nuclear bombs. Because of both the proliferation risks and the economic disadvantages of plutonium use, the United States does not use separated plutonium in its civilian nuclear reactors, and does not encourage others to do so. Others, including Russia and some of our allies, have taken a different view—with the result, as I mentioned, that almost 100 tons of separated plutonium for civilian purposes is now sitting in storage in various countries, with more building up all the time. We are working to identify alternatives to the reprocessing and use of civilian plutonium, and we will work cooperatively with other countries in our efforts to unravel this knotty problem.

TASK IV: PLUTONIUM DISPOSITION

Fourth and finally, we are examining what to do with the existing separated plutonium to reduce its security risks in the long term. We need to build on the security and transparency I have just described, and transform the excess weapons plutonium into a form in which it is better protected from diversion by its own physical and chemical characteristics, or eliminated altogether.

Fortunately, there is an excellent recent National Academy of Sciences report to guide our thinking. The Academy panel recommended that the "spent fuel standard"—making this material as difficult to use for weapons as the much larger and growing stocks of plutonium in civilian spent fuel—be the goal of our disposition efforts. Of all of the plutonium-disposition options the Academy panel examined, they concluded that two could achieve this "spent fuel standard" more quickly, more surely, and more cheaply than any of the others.

One approach is to use the excess weapons plutonium as fuel in existing nuclear reactors—mixed with uranium, in a so-called mixed oxide, or MOX fuel. The other is to blend the plutonium with high-level radioactive wastes, which would then be mixed with molten glass and shaped into large glass logs. Both the MOX approach and the glass approach would require substantial government spending. In each case, intensely radioactive products containing plutonium would have to be stored and ultimately disposed of, like the spent fuel and high-level wastes we already have to handle. There would still be some possibility that the plutonium could be recovered, but it would not be significantly easier to do that than to get plutonium out of the much larger and growing amounts of ordinary spent fuel already in storage.

Already, in response to the Academy's advice, DOE has begun examining the use of plutonium in existing light-water and CANDU reactors, as well as a variety of options for immobilizing plutonium for disposal. Initial results are encouraging. We are also examining a variety of other disposition options. In particular, we are studying the advantages and liabilities of a number of advanced reactor options for this mission.

Balancing the complex security, environmental, and technological issues involved, and building a sustainable consensus behind a single option, will not be easy. Virtually all of the options would require substantial plutonium processing, handling, and transport, and would result in some form of plutonium-bearing radioactive wastes that would have to be put somewhere. I have no doubt there will be some lively discussions concerning where such facilities will be located, and what process will be used for gaining approval for them. But as I said before, we cannot afford to delay. DOE will soon be releasing a Notice of Intent to prepare a Programmatic Environmental Impact Statement (PEIS) for fissile material storage and disposition. The long-term storage and disposition options identified during the scoping process will be evaluated to a level of detail that allows for analysis in a PEIS and subsequent decision in a Record of Decision. The PEIS will include comprehensive information on the environmental, safety and health impacts to workers and the general public associated with the range of options for long-term storage and disposition of plutonium and other fissile materials. We hope to focus our studies on a small number of leading options later this year, and decide on a disposition option and a path to implement it as soon as possible. We are looking forward to working with Congress and the public on these critical decisions: well-informed Congressional and public participation and oversight will be fundamental to getting the job done.

Keeping our eye on the ball—that is, remembering that the important disposition issues relate not only to U.S. materials but to Russian materials as well—will be essential. This week in Moscow (May 23-26), in parallel with the transparency and irreversibility working group, we initiated another joint working group called for by the January Clinton-Yeltsin summit statement, to examine the disposition and accumulation of fissile materials. Here too, we have reached agreement on a broad mandate for cooperation. These talks included initial discussions of a number of sensitive areas where our common interests had never previously been pursued—such as joint efforts to address the environmental, safety, and health threats posed by the plutonium in our nuclear complexes that is in less stable forms, such as solutions and residues. My office chairs the U.S. side of this joint working group, and I am optimistic that we can develop an ongoing cooperation that will put us on a path to address these problems.

THE WAY FORWARD

This is an ambitious agenda: securing fissile material, building confidence through openness, limiting further accumulation, and ultimately transforming it into forms that pose less security risk. The new common themes are comprehensiveness—focusing on all the materials rather than merely selected parts of the stockpiles—and reciprocity. We are now willing to open up our nuclear sites in the same way we are suggesting to Russia.

Our vision is of the United States and Russia running our nuclear weapons complexes in reverse—dismantling thousands of nuclear weapons rather than building more, getting rid of nuclear weapons materials rather than producing ever larger stockpiles, cleaning up rather than further fouling our nuclear sites, fostering openness and trust rather than maintaining strictest secrecy. This administration is committed to making that vision a reality.

As a first step, this year the Secretary of Energy created a department-wide task project to better coordinate efforts within the Department concerning the control and disposition of surplus fissile materials. The project reports directly to the Undersecretary and has line responsibility for developing Departmental recommendations and for directing implementation of decisions concerning the control and disposition of excess nuclear materials. As Undersecretary Charles Curtis has described to you, DOE is working hard toward a number of critical objectives, in an effort to ensure both security and safety in our management of these materials.

But because these are fundamental national issues, stretching beyond the expertise of any one department, we have established a broad interagency process to ensure that all the voices that must be heard, are heard. Working with the National Security Council, my office chairs the interagency working group on plutonium disposition. The two new U.S.-Russian working groups just established in Moscow will provide a useful focus for our efforts, and a continuing forum for discussion and cooperation.

Two years ago, frustrated by the inaction of the last administration, the late Richard Nixon warned that while we had "won" the Cold War, we were not yet committed to winning the peace. This Administration is working aggressively to accomplish that complex task. But we cannot do all this without the Congress' wise counsel and assistance. If we are to make difficult decisions soon, and sustain the broad support we need to carry them out over the long haul, your ideas and oversight will be critical. Working together, we can get this job done. The future of efforts to reduce nuclear arms and stem their spread depends on our success.

STATEMENT OF EDWARD D. FULLER, PRESIDENT, AMERICAN NUCLEAR SOCIETY

The American Nuclear Society (ANS) is a not-for-profit scientific, technical, and educational society whose 16,000 members include scientists; engineers; professors; managers and operators of manufacturing facilities, research laboratories, and power plants; planners; designers; regulators; attorneys; and diplomats. ANS is pleased to be able to provide to the United States Senate its comments on the sensitive and complex issue of disposition of plutonium from dismantled nuclear weapons.

A recent study by the National Academy of Sciences, led by Dr. Wolfgang Panofsky of Stanford University, says that the two "most promising alternatives" for long-term weapons-grade plutonium disposition are:

- fabrication and use as fuel, without reprocessing, in existing or modified nuclear reactors; or
- vitrification in combination with high-level radioactive waste. (separately printed Executive Summary, p. 2) A possible third option would be to bury the plutonium in "deep boreholes," several kilometers under the earth's surface.

The NAS says that simply to store indefinitely the plutonium might cause others to suspect the United States and Russia of desiring to preserve their weapons stockpile in a slightly less usable form, and would run "the risks of theft from the storage site." The Clinton Administration is using the NAS study as its own primary guide to plutonium disposition; though with what appears to be a strong inclination toward the second NAS alternative, vitrification.

The NAS study also states that "Choices regarding the fissile materials from dismantled weapons may also affect and be affected by *civilian nuclear power programs,* a topic that depends on economic, political, and technical factors outside the scope of this study. "(italics in the original, ibid., p. 7) However, this position is difficult to defend. The two issues, the disposition of military plutonium, and the future of civilian nuclear electric power, cannot easily be separated. As the NAS study itself says a few pages further,

> . . . policymakers will have to take into account the political impact that the use of excess weapons plutonium in reactors, or the disposal of that plutonium, would have on nuclear fuel cycle debates abroad. Whatever choice it makes, the United States will have to explain how that choice fits into the broader context of its nonproliferation and fuel cycle policies.

In other words, whatever is decided on the future of plutonium from weapons will have some effect on the future of peaceful nuclear power, both in the United States and abroad. The treatment of former military plutonium has to be seen in the overall context of the future of nuclear technology, as the NAS implies. As massive amounts of both civilian plutonium (mostly in spent fuel) and military plutonium from warheads pile up, and with no other military use for the latter readily apparent, it becomes ever less obvious why the two types of plutonium should be handled separately.

Beyond this, both the Administration and its critics agree on a technical level that reactor-grade plutonium, i.e., plutonium taken by reprocessing from spent civilian nuclear fuel, can be used to make explosives, with only the proviso that to make actual weapons is much more difficult than is the case with weapons-grade fuel. The basic concept of nuclear energy has always offered the prospect of reprocessing spent nuclear fuel to separate out the plutonium created while that fuel was "burned" in a reactor, to extract the full energy content available from each pound of natural uranium. With current technology each unit of uranium can be recycled up to about 100 times. By comparison, that classic "recyclable," paper, can only be reused about five times.

But since the NAS has proposed that weapons-grade plutonium not be reprocessed after a "once-through" burning to generate electricity, some may draw the conclusion that civilian-grade plutonium also should not be reprocessed. Indeed, in a separate action last fall, the White House stated that

> The United States does not encourage the civil use of plutonium, and, accordingly, does not itself engage in plutonium reprocessing for either nuclear power or nuclear explosive purposes. (White House fact sheet, September 27, 1993)

Note that the White House itself blurred the distinction between civil and military use in this very sentence. The fact sheet did say that the United States would, in effect, tolerate reprocessing among certain major allies, but even here we hear of U.S. Government's stalling on approval of retransfers of spent fuel in Europe across borders to reprocessing plants. The White House statement clearly meant that the United States Government would prevent reprocessing at home, should someone wish to do it for the normal energy/economic reasons described above. We will return to the issue of cost comparisons between reprocessed plutonium and low enriched uranium in a moment.

The stated reason the Administration is opposed to the use, and especially the reprocessing, of civilian as well as military-origin plutonium is the proliferation risk of plutonium. And because the Administration does not like plutonium, it is intent on killing the Actinide Recycling element of the Argonne Laboratory Integral Fast Reactor (IFR) program. Yet, Actinide Recycling was specifically designed to preserve the advantages of plutonium—enormous energy potential through recycling—while preventing the separation of pure plutonium, thus negating the proliferation threat. Even the Department of Energy draft five-year reactor R&D plan calls Actinide Recycling "an innovative and highly diversion-resistant nuclear fuel cycle technology"—on the very same page as it announces it is going to terminate the program in fiscal year 1995 because DOE believes the program is inconsistent with the Administration's position on using plutonium for civilian power. ("Advanced Reactor Research and Development Programs: 5-Year Plan for Advanced Reactor Activities Under the Energy Policy Act of 1992, draft May 1994," received April 1994, p. 9) One would think that the Administration, dedicated as it is to sustained development and recycling in so many other areas, would be very pleased with Actinide Recycling.

The Administration has at times said that in avoiding reprocessing and the use of plutonium to make electricity it wanted to serve as an example to the rest of the world. But "the rest of the world" that counts, countries such as France, Japan, Russia, and the United Kingdom, have consistently rejected our proffered example, just as they did in the late 1970s (please see enclosure with recent quotations from these governments on reprocessing and plutonium). At the same time, the Administration is opposed to developing the IFR, a technology which could make safely available plutonium from whatever source for generating electricity, without running the risk of contributing to proliferation. We might add, by the way, that the IFR could also substantially reduce the need for resources for ultimate waste disposal. If the reason for DOE's dropping the IFR is really the Administration's antiplutonium policy, perhaps the Administration ought to change that policy. The problem is not plutonium; it is proliferation, and, however much the Administration professes to be opposed to proliferation, its position on the IFR does nothing to stop that threat.

Thus, whether or not it is the NAS's intention, its recommendations either to burn without reprocessing or to bury military plutonium can also have powerful implications for the overall context of the civilian use of plutonium, and ultimately for the future of the nuclear option in general, which the Administration repeatedly says it wishes to keep open. For the unique value of nuclear energy is that uranium and its daughter plutonium can be recycled so many times. It is doubtful that a civilian nuclear power industry would ever have been developed at all, if it were seen to be completely dependent on the "once through" cycle and therefore on the availability of a finite resource, natural uranium. The Administration and apparently the Panofsky panel see plutonium as a "waste." Others see it as the almost infinite multiplication of environmentally safe, emissionless electric power, at a time when worldwide electricity needs just of the next half century are likely to increase by a factor of several times.

The NAS study seems to have been written purely from the standpoint of proliferation concerns, attempting to ignore the negative effect its proposals would likely have for the civilian nuclear power industry. Members of the Administration are more frank regarding their long-term goals. The very last line of the first "Draft Surplus Fissile Materials Control and Disposition Project Strategic Plan" (spring 1994) from DOE's Nuclear Materials Disposition Project Office stated that a "Key Success Indicator" for its program was, "Extent to which nuclear materials are eliminated world-wide. "(p. 8)

Aside from eliminating at a stroke 22 percent of the electricity-generating capacity of the United States (and this from the Department of Energy!)—and over 70 percent of that of France—such a policy would virtually close down the National Institutes of Health, where 80 percent of their research depends on the use of nuclear isotopes. And this is not to speak of the tens of thousands of people in America alone who would die every year because radiation therapy for cancer was no longer available.

This statement was, no doubt, a mistake. It is likely that the writer meant to say, "Extent to which nuclear explosive materials are eliminated worldwide," or something of that sort. But it would certainly seem to be a first-class Freudian slip, showing what the true views of at least part of the political leadership of the Administration and of DOE want for the country: the elimination as far as possible of any dependence on technology with the "N-word" in it.

Before going any further, we should look at the international context for this issue. For the time being, "international," as it refers only to dealing with plutonium removed from weapons, can pretty well be limited to Russia, as the nuclear arsenals of Britain, France, and China are all only a fraction of those of either the United States or Russia (or the ex-Soviet Union). DOE's problem is that Russia has a view of the value and usefulness of military-origin plutonium that is totally at odds with that of the United States. In the United States some even make the argument that plutonium has a negative value, that it really is waste but nonetheless has to be guarded or otherwise disposed of because of its proliferation hazards.

But the Russian science attache recently wrote to ANS that "Minister Mikhailov [of Minatom] declared . . . that Russia views plutonium as a national energy treasure and we have the technological challenge to find an optimum way of its use for electricity production. "(letter of April 8, 1994) In a "stakeholders" meeting of May 4, several Administration officials described how difficult it was to reach agreement with the Russians on dealing with military plutonium, for this very reason. The Russians do not want to bury or "once-through burn" this resource.

One of the reasons offered by the NAS and the Administration as to why they want to burn (but not reprocess) or bury plutonium is concern that it could be stolen from normal, even if well-guarded, storage facilities. Though the situations are not exactly analogous, one might ask oneself how great the national outcry would be if ten to twenty pounds of gold were stolen from Fort Knox, an amount equivalent to the plutonium needed to make a nuclear weapon. With that kind of outcry in mind, it is obvious that we can guard plutonium as well as we guard gold!

But aside from that fact, many U.S. officials seem to feel that the biggest reason to stay away from secure storage is not fear of theft or diversion from U.S. stocks, but, given the uncertainty about Russia's future stability, fear for the security of stored plutonium in that latter country. Apparently here to we should serve as a good example. The NAS says,

> The current Russian government's preference for storing plutonium until it can be used in the next generation of Russian liquid-metal fast reactors is not attractive because of the indefinite time before disposition could begin, the security liabilities of prolonged storage, and the high cost of these reactors. (Executive Summary, p. 15)

The NAS proposes that the U.S. help build secure storage facilities in Russia, and that both sides accept IAEA safeguards, for an independent third-party check. These are very useful suggestions. But the NAS also argues that the United States should move rapidly to burn without reprocessing, or to bury, enormous stocks of energy-rich plutonium, when it is not really necessary to do so for any reason on this side of the Atlantic. The NAS feels that the U.S. should do so, to be an example to Russia. But what is the point of the America's wasting all this energy-rich plutonium, when Russia, which really does have serious security concerns, ignores our efforts? Simply to waste plutonium in the U.S., to serve as an example in connection with security concerns for plutonium in Russia, seems as pointless as to waste it in connection with civilian plutonium reprocessing, in the case described above regarding Britain, France, Japan, and Russia itself.

Instead of looking at military plutonium as a curse to be gotten rid of, it should be brought fully into the civilian economy, to be looked upon as one more resource that can be recycled for civilian use to make electricity, analogous, for instance, to surplus tanks that can be cut up for steel scrap to be reused to make cars. If, as the NAS suggests, surplus military plutonium could be run through reactors once to make electricity, why is it not reasonable to recycle it often enough to use up its full energy content? As we have made clear, to argue against recycling military plutonium is to set a precedent for what ANS believes is the mistaken once-through no-recycling policy adopted by this Administration for civilian plutonium.

If we go the route of "burning" military plutonium in reactors anyway, the same type of what the NAS calls "intermediate storage" (ibid., p. 12) could be used as if we only planned to burn the plutonium once. Once it has been run through a reactor it becomes spent fuel, with the same degree of built-in protection through extreme radioactivity as normal civilian-origin spent fuel. The NAS recognizes this fact. (ibid. p. 13) It would seem most sensible—avoiding artificial distinctions—just to store and treat military plutonium which has become spent fuel exactly like civilian spent fuel, and it is ANS's very strong preference that this fuel be reprocessed, both for energy purposes and to reduce the overall problem of waste disposal. It also happens to be true that the only way one can reasonably rid the world of plutonium once and for all is to burn it in reactors. To bury it is only to postpone the reckoning.

This brings up the economic issue which has been alluded to earlier. Is it economic to recycle spent fuel, when there is so much natural uranium ore around? The NAS takes a strong position that burning military plutonium in reactors, even while producing electricity, will be very costly. But it does not provide much economic analysis to prove its point. Most economists would probably agree that in today's market burning plutonium to make electricity, with or without recycling and liquid metal reactors, would be more costly than burning low enriched uranium.

But to argue that a given process is currently uneconomic is not to argue that it should be forbidden by law or policy, if there is no other good reason for doing so. Instead, in the case of plutonium, the sensible thing to do is to store it securely against the possibility of proliferative diversion until it becomes economic to use and eventually recycle the plutonium. This should be the choice, rather than wasting plutonium's energy value by putting it into "deep boreholes" or other nearly inaccessible locations, or even treating it like ordinary nuclear waste, vitrifying it and putting it underground. The only effect of the latter method of disposal, the likely choice of the Administration, is to create "plutonium mines." In this case, the plutonium can eventually be retrieved for legitimate use to make electricity, in which case the question arises as to why one is vitrifying it in the first place when one can store and retrieve it at much lesser expense by treating it from the start as a potentially valuable resource. Or the material might be dug up by proliferators, especially a later, recalcitrant government which holds the relevant territory.

Some people, including both the NAS panelists and some Administration officials, compare plutonium to oil shale—a useful energy resource but one currently too expensive to exploit. Neither ANS nor anyone else advocates reprocessing if it is economically unfeasible. But, by the same token, if the danger of proliferation is resolved and so much cheap energy can be liberated by reprocessing, it seems irrational to go to the opposite extreme, to literally outlaw the procedure. If plutonium burning and recycling are currently uneconomic, store the plutonium until it does become profitable. Beyond that, if governments really are concerned about large current inventories of plutonium, they might be willing to pay the small premium in the cost of electricity generation implicit in using plutonium now.

We are concerned that many Administration officials view the use of plutonium, or of most other nuclear materials and technologies, in ideological terms not subject to rational analysis. That interpretation of the Administration's views is the only one which might explain the Administration's opposition to the Integral Fast Reactor, which would prevent the waste of the vast energy resources found in nuclear energy while almost totally precluding the possibility of diversion of plutonium to military use. Again, this is from an Administration which otherwise strongly supports recycling.

In short, the American Nuclear Society sees the proper disposition of military plutonium as a splendid example of turning modern swords into plowshares. It views any attempt to vitrify and bury this plutonium as a waste of energy at a time when the world cries out for inexpensive long-range sources of electric fuel consonant with the concept of sustainable development. With stockpiles of both military and civilian plutonium rapidly increasing in size, there seems to be no reason for the continued artificial segregation of military from civilian plutonium. They should both be seen as important contributions to solving our long-range energy needs. If neither military nor spent-fuel civilian plutonium are currently economic in competition with the once-through nuclear cycle, or with other non-nuclear sources of energy, they should be stored for the interim, under appropriately rigorous conditions. This should be done both because of the proliferation threat and because of plutonium's enormous long-range inherent energy value. The day will surely come when changing economic conditions justify its use.

The ANS sees the threat of proliferation, the main realistic impediment to using plutonium for civilian purposes, as preventable through proper security in the current LWR cycle and in future storage procedures, and the use of a system such as the Integral Fast Reactor to make impossible as a practical matter the diversion of plutonium. Once the proliferation problem has been dealt with, it seems that the only reason not to use plutonium is ideological, or, frankly speaking, irrational opposition to nuclear technology as such. Outlawing the use of plutonium would in a few decades effectively put a stop to nuclear technology, especially in the electric generating field. When people's lives depend on nuclear medicine, and improvements in those lives depend on the provision of large amounts of inexpensive electrical energy worldwide, it is unfortunate that this mindset seems so widespread in Washington at the present time.

MAJOR COUNTRIES BACK PLUTONIUM USE, RECYCLING/REPROCESSING, WHILE RECOGNIZING PROLIFERATION CONCERNS

The Administration's main argument against the Advanced Liquid Metal Reactor/Integral Fast Reactor (ALMR/IFR) this year is that it promotes nuclear proliferation by legitimizing commercial use of plutonium. Therefore, argues the Administration, we should forego the enormous energy benefits of using plutonium including in the ALMR/IFR, as a good example to the rest of the world. Let us see how "the rest of the world," in the form of our major industrial friends—and competitors—feels about the use of plutonium and reprocessing/recycling in this connection, and what they think, either implicitly or explicitly, about the Administration's point of view. For the record, the Administration this year has expressly renounced the budgetary argument against the ALMR/IFR, agreeing that it would cost as much to close down the project as to complete it.

FRANCE: "Spent fuel is not considered waste: It is reprocessed and only about 4 percent of its content, the 'real' waste, is vitrified and disposed of." (statement provided by French nuclear attache, Washington, DC. March 1994) "No technical obstacle to use of Pu [plutonium] from 'weapons to plowshares' in LWRs [light water reactors, present reactor generation, not advanced ALMR; thus eliminating ALMR will not in any case eliminate plutonium in commerce—note by American Nuclear Society]. . . . Consumption of all separated plutonium. . . . Most efficient way to manage any stockpile of Pu (separated or not) is through recycling in reactors." (statement by Gerard LeBastard, President, COMMOX, provided by French nuclear attache, March 1994)

"[M]aybe the most **practical** and **economical** way to disposing of it [plutonium] . . . was through its use in power generating plants with light water or fast neutron reactors [e.g., ALMR/IFRs]. . . . [W]hat is **true here** [in the U.S.] isn't always true elsewhere: given the availability of huge fossil resources [sic] in this country, the U.S. can afford itself the luxury to consider spent fuel as a waste, other countries like France or Japan cannot. . . . [N]o **technically efficient** mesure [sic], such as destruction of plutonium by fast neutron reactors [such as the ALMR/IFR], should be discarded on the sole ground that is not readily available in a given country." (unofficial statement of French nuclear attache, March 1994, bold in the original)

JAPAN: "However, from a long-range viewpoint, nuclear fuel recycling is indispensable to mankind in promoting utilization of nuclear energy, because it will substantially prolong the life of uranium resources. . . . [Japan] has scarce energy resources and use[s] a lot of them. . . . Nuclear Fuel Recycling is significant in that useful materials, which would become waste if recycling were not done, can be reused as energy resources. . . . Thus, nuclear fuel recycling will enable us to control radioactive waste properly. If Japan promotes nuclear fuel recycling, oil and other fossil resources can be reserved for the developing countries and next generations.

. . . [To prevent proliferation,] . . . stern measures are taken for protecting nuclear materials. Thus, Japan positively supports the IAEA safeguards system. Japan has established a rule not to possess plutonium more than necessary when promoting nuclear fuel recycling." ("Outline of 1993 White Paper on Nuclear Energy for 1993 [Japan] Atomic Energy Commission General Remarks [Tentative]. November 1993," supplied by Japanese science counselor, March 1994)

RUSSIA: "Minister [of Atomic Energy] Mikhailov declared . . . that Russia views plutonium as a national energy treasure. . . . Reprocessing and use of plutonium in the area of peaceful nuclear energy thus remains to be our policy line since it meets the strategic interest of Russia. . . . [Concerning the threat of proliferation,] we believe that the U.S. and Russian Governments could combine efforts to create a system of international control of fission materials and undeclared nuclear activity." (personal communication of Counselor for Science and Technology, Russian Embassy, Washington, DC, to Patrick W. Murphy, Director of Federal Affairs of American Nuclear Society, Washington, DC, April 8, 1994.)

UNITED KINGDOM: What follows is in reference to THORP, the UK's Thermal Oxide Reprocessing Plant: "The Government has made its support for reprocessing as a spent fuel management option clear on a number of occasions. . . . [A 1990 Government document] explained that reprocessing separates recyclable material from waste and . . . it allows over 95% of the uranium and plutonium present in the spent fuel to be reused. . . . [R]eprocessing is the only long term spent fuel management and conditioning strategy that is being actively pursued at present in the UK. . . . [Under IAEA international regulations.] . . . plutonium will be subject to adequate physical protection measures in the UK, during international transport to THORP customers, and when in the possession of THORP customers. Plutonium has been satisfactorily stored, transported and used in the UK, in accordance with these measures, for many years. . . . [Foreign customers of UK reprocessing services have signed the Non-Proliferation Treaty and taken on other non-proliferation obligations, and have subjected themselves to IAEA inspections, and] . . . there is no reason to doubt the worth of the bilateral assurances given by them. All THORP customer states are respected members of the international community." ("Statement of [United Kingdom] Government Policy on Reprocessing and Operation of the Thermal Oxide Reprocessing Plant at Sellafield," n.d., approximately late 1993)

COMMENTS

Uranium/plutonium fuel can be recycled about 100 times. In comparison, paper, a classic "recyclable," can only be recycled 4 to 6 times. The key issue in the dispute over the commercialization of plutonium is whether the very large energy value of plutonium outweighs the danger that the plutonium in question might be diverted to make nuclear weapons. Ultimately this is a question of judgment: can plutonium be carefully enough controlled in its role as energy producer, so that no nation or individual. e.g.. terrorist, will be able to divert enough plutonium to make a nuclear weapon.

The ALMR/IFR would, of course, use plutonium as a fuel, but never in a pure, weapons-usable form. It does not follow that using plutonium commercially promotes military nuclear proliferation. The world has many years of experience with plutonium and other nuclear materials in commerce, and with the physical safety, materials accountancy, and national and international safeguards appropriate to such usage. So far there are no proven cases of diversion of commercial nuclear materials to bomb-making, either by a government or by terrorists or similar criminal elements. Also importantly, the foreign countries see reprocessing/recycling as a way of sharply limiting the amount of radioactive waste they have to deal with. And some of them come close to calling the U.S. a wastrel.

It is not surprising that "the rest of the world" is not following the Administration's anti-plutonium "example." The only results of the Administration's anti-ALMR/IFR crusade will be the irritation of our allies, the loss of a leading-edge technology which would actually introduce a highly proliferation-resistant form of reprocessing, the loss of an important energy conservation and recycling program at a time when the Administration is promoting both energy conservation and recycling, and, frankly, the loss of a large number of precisely the kind of high-tech, high-export, high-education, high-paid jobs the Administration continually says it is trying to promote.

Unfortunately, the Clinton Administration is also out of touch with views of most of the nuclear experts in the United States who have studied professionally the issues of plutonium use, reprocessing, and non-proliferation for decades, and know them best. This includes many of the employees of the Department of Energy itself. These people agree with the arguments of the foreign countries cited above. They feel that we can, and have the benefits of recycled plutonium without running an undue risk of proliferation. They feel that we simply can not afford to throw away nuclear technology, because it is such an important contribution to clean, emissionless, recyclable energy production, and ultimately to sustainable development worldwide.

Patrick W. Murphy, Director of Federal Affairs, American Nuclear Society, tenth floor, 370 L'Enfant Promenade, SW, Washington, DC 20024, tel.: 202-646-7575, fax: 202-646-7508.

STATEMENT OF THE WASHINGTON PUBLIC POWER SUPPLY SYSTEM

The Washington Public Power Supply System (Supply System)[1] is currently exploring the potential of fueling two of its nuclear power plants with mixed oxide fuel (MOX fuel), comprising a mixture of uranium and surplus weapons-grade plutonium from U.S. stockpiles, in coordination with the U.S. Department of Energy (DOE). The fissioning of MOX fuel in the Supply System's reactors, located on the Hanford reservation, would simultaneously assist the federal government in disposing of weapons-grade plutonium and generate electricity for commercial consumption, thereby offsetting a portion of the cost to the federal government of disposing of plutonium from dismantled nuclear warheads.

This concept, known as the "Dual Purpose Concept" or DPC, would entail arrangements under which DOE would process plutonium into MOX fuel. The MOX fuel would be delivered to the Supply System's reactors, and the spent MOX fuel would be returned to DOE for disposal. The Department would support the conversion of the Supply System's currently operating WNP-Unit 2 plant and the completion of its 65% constructed WNP-Unit 1 plant, both of which have the capability to burn MOX fuel. The Supply System would operate the plants, and the generated power would be sold to the Bonneville Power Administration. DOE would pay plant operation and maintenance costs, and the revenues resulting from the sale of power would serve as a credit against the federal government's costs. The Supply System reactors would remain the property of the Supply System and the nuclear plants would continue to be licensed by the Nuclear Regulatory Commission.

The National Academy of Sciences' Committee on International Security and Arms Control released a report on January 24, 1994, entitled "Management and Disposition of Excess Weapons Plutonium," which called the existence of surplus plutonium "a clear and present danger to national and international security" based on the recognition that the mere existence of this material creates proliferation risks. The National Academy of Sciences' Report concluded that "options for the long-term disposition of weapons plutonium should seek to meet a 'spent fuel standard'—that is, to make this plutonium roughly as inaccessible for weapons use as . . . spent fuel from commercial reactors." Dr. Wolfgang Panofsky, Chairman of the National Academy Report, has testified to Congress that it is extremely urgent, once the plutonium has been safely removed from the warheads and securely stored, to choose a disposition option which meets the "spent fuel standard." The Department of Energy has stated that they will adopt this standard when evaluating plutonium disposition options.

Government-sponsored studies, including the National Academy of Sciences' Report, indicate that conversion of surplus plutonium to MOX fuel and use of the MOX fuel in existing commercial nuclear reactors may be the best near-term strategy for disposing of excess weapons plutonium and that the Supply System's plants are prime candidates for the task. In brief, the Supply System's Dual Purpose Concept:

- builds on current U.S. plutonium disposition initiatives;
- promotes nonproliferation through safe, cost-effective, timely and environmentally sound plutonium disposition;
- reduces the risk of proliferation by satisfying the spent fuel standard; and
- offers substantial benefits beyond plutonium disposition.

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[1] The Washington Public Power Supply System is a municipal corporation and joint operating agency of the State of Washington that is empowered to finance, acquire, construct and operate facilities for the generation and transmission of electric power. The Supply System currently operates a 1,120 megawatt nuclear power plant, WNP-Unit 2, located on the Hanford Reservation, as well as a 27.5 megawatt hydroelectric facility, the Packwood Lake Project. The Supply System also owns two partially completed nuclear power plants, including WNP-Unit 1, which is a 65% complete nuclear power plant located adjacent to the operating WNP-Unit 2 plant on the Hanford Reservation. All electricity produced by the Supply System projects is delivered to electrical distribution facilities owned and operated by the Bonneville Power Administration (BPA), which in turn distributes the electricity to utility systems throughout the Pacific Northwest.

PROMOTING NONPROLIFERATION THROUGH SAFE, COST-EFFECTIVE, TIMELY, AND ENVIRONMENTALLY SOUND PLUTONIUM DISPOSITION

When compared to other plutonium disposition options now under consideration, the Supply System's Dual Purpose Concept offers several advantages:

Maximized Safety—The Supply System's concept centralizes operations on a single federal reservation, thereby facilitating resolution of transportation, fuel-handling, and safeguards issues and maximizing operational efficiencies. In addition, this concept employs a proven technology (MOX fuel use) and an experienced operator of commercial nuclear power plants licensed by the Nuclear Regulatory Commission.

Cost effectiveness—The Supply System's concept employs existing federal infrastructure and offsets costs to the government by generating electricity for sale by BPA. Existing government facilities on the federal reservation may be instrumental in the conversion of warheads to reactor fuel, thus promoting security, as well as cost effectiveness.

Near-term plutonium disposition—Because it employs existing reactors, a proven technology, and an experienced plant operator, the Supply System's concept permits plutonium burning at the earliest possible date (subject to the availability of MOX fuel).

Environmental soundness—The Supply System's concept involves a proven method of plutonium conversion to a stable and familiar fuel form. In addition, this concept results in a conventional and highly proliferation-resistant waste, the management of which is part of existing U.S. programs.

The Dual Purpose Concept is not a proposal for plutonium recycling; it is not a model for, nor does it encourage, development of a commercial MOX fuel market; and it does not in any way promote nuclear weapons production. Rather, it envisions cooperation between the Supply System and the federal government for use of surplus plutonium in a limited number of commercial reactors located on federal reservations to reduce stockpiles of surplus weapons plutonium at the lowest cost to federal taxpayers.

REDUCING PROLIFERATION RISKS WITH THE SPENT FUEL STANDARD

Not only does the Supply System's Dual Purpose Concept promote nonproliferation through safe, cost-effective, timely and environmentally sound plutonium disposition, the DPC would also actually reduce risk of proliferation of weapons-grade plutonium by converting it into a conventional, proliferation-resistant waste form. Utilizing MOX fuel in the Supply System's WNP-1 and WNP-2 reactors would convert weapons-grade plutonium into a form which satisfies the "spent fuel standard" endorsed by the Department. In fact, when the MOX fuel is "burned" in the Supply System's reactors, the fuel would be converted to a waste form that is essentially the same as that produced in currently operating U.S. nuclear reactors. Plutonium in spent fuel is considered a low proliferation risk because sophisticated technology is required to handle and reprocess the highly radioactive fuel before it could be converted for weapons use. Unlike vitrification processes that are also being considered as a possible plutonium disposition option, the Supply System's Dual Purpose Concept would transform weapons-grade plutonium into a form of plutonium much less suitable for weapons use.

BENEFITS BEYOND PLUTONIUM DISPOSITION

Beyond the comparative advantages of the Supply System's approach to plutonium disposition, substantial additional benefits would result from use of the Supply System's plants to burn MOX fuel in a effort to dispose of excess weapons plutonium:

Economical power generation—the Supply System's concept provides for the generation of reliable, competitively-priced electricity, while adding needed generating capacity in the Pacific Northwest.

Jobs creation—the Supply System's concept would result in 4,000 new highly-skilled jobs for completion of WNP-1 and modification of WNP-2 and 1,000 new highly-skilled jobs for long-term operation of WNP-1.

Environmental preservation—the Supply System's concept would reduce current and future reliance on hydro power, thereby alleviating pressure on the region's fish population, and add generating capacity without either the need for new facilities or increased greenhouses gases.

While the Supply System's Dual Purpose Concept is fundamentally one for beginning U.S. plutonium disposition, these supplementary benefits reinforce the overall soundness of the Supply System's approach.

IMPORTANCE OF A TIMELY DECISION

Given the lengthy process the Department of Energy has stated it will follow in evaluating and choosing the method for ultimate disposition of the surplus plutonium, the Supply System is concerned that the significant advantages of the Dual Purpose Concept could be lost. The Department has testified that it plans to evaluate the disposition options in a Programmatic Environmental Impact Statement (PEIS) and subsequent Record of Decision. The Department has stated that a Notice of Intent should be published in early to late June 1994 and that public scoping meetings and data collection will continue until the fall of 1994. The Department proposes to have a draft PEIS and further public hearings by mid-1995, with the Record of Decision completed by early 1996. However, the Supply System recently has voted to discontinue preservation funding for its two partially completed reactors early in 1995. Thus, the possibility exists that the Department will need to continue preservation funding for one or both of the Supply System's partially completed reactors in order to keep all practical plutonium disposition options viable. Keeping the Dual Purpose Concept as a feasible alternative also would allow for near-term disposition after the Record of Decision is made in early 1996.

If preservation funding is not continued past early 1995, the rectors in effect could not be licensed by the Nuclear Regulatory Commission. Thus, the Department would lose the opportunity to choose a plutonium disposition option that is licensed and regulated by an independent body that possesses technical experience and public confidence in regulating commercial light water nuclear reactors, some of which have burned MOX fuel on a experimental basis in the past. In addition to the advantages listed above, the United States would lose a disposition option which offers the significant advantage of signaling to the world that we are committed to disposing of surplus plutonium as expeditiously a possible.

CONCLUSION

There is broad consensus among experts, decision-makers and the general public that nations possessing nuclear weapons must begin the task of managing and disposing of weapons-grade plutonium from dismantled nuclear warheads. The Supply System's Dual Purpose Concept offers a means of addressing U.S. plutonium disposition needs in a safe, cost-effective, and timely manner—one which builds on demonstrated technology, current plutonium disposition efforts, supports the Clinton Administration's nonproliferation policy, reduces the risk of proliferation and offers other substantial advantages.

ABB COMBUSTION ENGINEERING NUCLEAR SYSTEMS,
Windsor, CT, May 20, 1994.

Hon. J. BENNETT JOHNSTON,
Chairman, Energy and Natural Resources Committee, U.S. Senate, Dirksen Senate Office Building, Washington, DC.

DEAR SENATOR JOHNSTON: Attached is a written statement on the "Disposition of Excess Weapons Plutonium". I would appreciate having this statement entered into the written record of the upcoming hearing on this subject, scheduled for May 26.

Thank you for your time and attention to this very important matter.

Sincerely,

ROBERT E. NEWMAN.

[Enclosure.]

STATEMENT OF ROBERT E. NEWMAN, PRESIDENT, ABB COMBUSTION ENGINEERING NUCLEAR SYSTEMS, WINDSOR, CT

As President of ABB Combustion Engineering Nuclear Systems, I am pleased to have the opportunity to submit a written statement concerning our government's efforts to find a safe, economical and environmentally sound solution for the disposition of surplus nuclear materials. Of particular interest to this committee today is the stockpile of U.S. and Russian plutonium available through the dismantlement and destruction of older weapons systems, along with each government's commitments under the INF and START treaties and unilateral U.S. and Russian Presidential directives on nuclear weapons reductions.

We compliment the committee for giving this matter the serious attention it deserves. While the Administration begins its earnest review of available options and technologies for the disposition of excess plutonium, it is important that the legislative bodies of both the House and Senate provide important direction, guidance and the necessary budget authority to the agencies for conducting meaningful and timely evaluations that will lead to implementation of the best available option.

We believe that the recent report on excess weapons plutonium by the National Academy of Sciences (NAS) provides a very good assessment of the situation in both the U.S. and Russia. Concerning the disposition of surplus plutonium, the NAS report identifies a number of technical and institutional issues that need further study before any final decisions can be made. Resolution of these issues will involve major policy decisions related to non-proliferation, environmental, and economic issues. Although these policy issues will have to be decided by the government, we believe that it is an appropriate role for industry to offer potential solutions that can assist in the coming debates on these important matters.

Concurrent with the release of the NAS report, the Department of Energy established a new Project Team for the Control and Disposition of Surplus Fissile Materials. As we currently understand the Department's tentative thinking on the excess weapons plutonium disposition process, there is likely to be a screening of the various options during the coming summer. The options that survive the screening process will be studied until sometime in 1996 and a Record of Decision will be issued. The Department will then proceed with the implementation of the selected option(s).

It would seem logical to us that, after completing the screening process, DOE might establish parallel programs, to be implemented over the next several years, to address the lists of technical and institutional issues for each of NAS's recommended options: (1) vitrification with high level wastes, (2a) consumption in an existing reactor, or (2b) consumption in an evolutionary Advanced Light Water Reactor. Toward this end, ABB-CE (along with seven other companies on our System 80+ Team) has just submitted to DOE a recommended Program Plan that would specifically implement the NAS's recommendations for the evolutionary ALWR option.

The primary objective of the program described in this plan is to develop the highly detailed, accurate cost, schedule, and revenue information necessary for a consortium to privately fitted deployment of a System 80+ standardized Advanced Light Water Reactor (ALWR) nuclear facility, including a Mixed Oxide (MOX) fuel fabrication facility, at the Department of Energy's (DOE's) Savannah River Site near Aiken, South Carolina.

The Program Plan goes beyond the NAS report by addressing three important missions to be carried out by the Department: (1) excess weapons plutonium disposition, (2) tritium production, and (3) diversification of DOE defense facilities, particularly the Savannah River Site. Although the Department is addressing each mission separately, the Program Plan offers a unique opportunity to establish a single project that takes advantage of the synergies resulting from a combination of the three missions—and, at the same time, it offers the opportunity to bring in billions of dollars of private funds to finance the project.

Specifically:

The Program is based on conversion of the excess weapons plutonium to the "Spent Fuel Standard" recommended by the National Academy of Sciences.

The Program makes use of the unique capability of ABB Combustion Engineering's System 80+ Advanced Light Water Reactor to maximize the conversion rate (using 100% mixed oxide fuel).

In addition to conversion of the excess plutonium, the System 80+ plant, which would be located at the Savannah River Site, would generate wholesale electric power in the southeastern U.S. region, where a growing market is projected to exist.

The plant deployment would be privately funded by a consortium, acting as an Exempt Wholesale Generator under the Energy Policy Act of 1992.

Government funding would be required in only two aspects:

- the initial program leading to organization of the consortium, and
- annual payments, after the plant is operational, for irradiation services to convert the excess plutonium and produce tritium, if needed.

The schedule for the System 80+ program is compatible with the DOE schedules for plutonium disposition planning and tritium production planning, as presently understood.

The plant would have the capability of producing tritium as and when the need might arise, but would remain viable even if tritium production is not required.

The plant would support DOE's objective of providing diversified ongoing technical work at the Savannah River site and promote the government's efforts to redirect and retrain the reduced defense workforce in the region.

To successfully implement the plutonium disposition program in a timely and economical fashion, it is important for DOE to complete its screening process this summer and to limit further studies to only a few of the most promising options. If the

Department does not quickly narrow the options for further study, work efforts will be so diluted that no meaningful progress can be made.

The NAS report, along with previous DOE studies, provides a clear and defensible basis for narrowing the options to (1) vitrification, (2a) existing reactors, and (2b) evolutionary ALWRs. The Program Plan that we just submitted to DOE provides clear justification or narrowing the evolutionary ALWR option to our privately funded System 80+ initiative.

In testimony to this Committee earlier this year, Secretary O'Leary suggested that it is important to settle upon the best technology before selecting particular projects to carry forward. Her point is a valid one. Each of the reports by NAS, DOE, Rand Corp., and OTA all identify a Light Water Reactor (LWR) with capability to utilize a 100% MOX reactor core as the most viable near term reactor option for conversion of weapons plutonium to the spent fuel standard. The NAS report noted that ABB Combustion Engineering's System 80 and System 80+ designs are the only LWRs in the world that are already designed to consume 100% MOX fuel. System 80+ has also received its Final Safety Evaluation Report from the NRC, making it readily available for use today. Therefore, it seems obvious that System 80+ is the best "technology" available in the category of building a new reactor for plutonium disposition.

In moving to the next step of comparing the evolutionary ALWR option to vitrification and existing reactor options, we believe that it is desirable (in fact, necessary) to look at particular "projects". This will provide the necessary information concerning relative economics of the various options—especially when innovative financing approaches are available under certain circumstances. Otherwise, it is impossible to develop the detailed and accurate information necessary to provide a meaningful comparison of these disparate options.

To develop the needed policies for moving forward on disposition of excess weapons plutonium, this Committee, the Congress, and the Administration face a number of important decisions in the coming months. ABB Combustion Engineering, along with the other System 80+ Team members, stands ready to assist in any way that we can. We believe that the approach described in our Program Plan provides an exciting opportunity to establish a partnership between government and industry—in a way that best meets defense and environmental needs, at minimum costs to the government.

STATEMENT OF GENERAL ELECTRIC—NUCLEAR ENERGY

Mr. Chairman, members of the Subcommittee, General Electric appreciates the opportunity to participate in these important hearings. GE Nuclear Energy has been under contract to the U.S. Department of Energy to evaluate the use of GE designed reactors to support the disposition mission. The results of the Boiling Water Reactor (BWR) studies are presented in the following paragraphs. We thank the committee for the opportunity to provide this in support of the committee's work supporting the disposal of the stockpile of excess weapons plutonium.

The dismantling of nuclear weapons will require the U.S. to disposition 50 to 100 metric tons of excess plutonium as part of bilateral commitments with Russia. A number of studies, including the one recently released by the National Academy of Sciences (NAS), have concluded that the utilization of plutonium as fuel for light water reactors, and the subsequent conversion to spent fuel with its high radiation barrier, is the most readily achievable and best near term means of providing a suitable diversion resistance to this material. The NAS study also stressed the need for timely selection and initiation of the U.S. disposition process which would enhance the prospects for a timely reciprocal program agreement with Russia. We at GE support these conclusions, and believe the government should move forward with the selection of fission reactor technology to support the disposition program.

TECHNICAL EVALUATION

In 1993, DOE concluded a review of contracted technical evaluations of fission reactor technology, and concluded the Advanced Boiling Water Reactor (ABWR) was a proven technical approach for the disposition of plutonium. Additional studies were authorized by the DOE, to provide more comprehensive evaluations of the technology and allow for more detailed comparisons of the advanced reactor options. GE has now completed the 15 month long detailed study for the DOE on the capability of its 1350 MWe ABWR to utilize and convert the plutonium to spent fuel. A separate report nearing completion addresses the findings relative to the use of existing boiling water reactors (BWRs) to achieve the same goal. The GE studies have concluded that all technical elements currently are in place to allow the U.S.

to proceed with a short term, low risk program for the use of mixed oxide (MOX) fuel involving either the Advanced Boiling Water Reactor or existing reactors.

Although other foreign owned reactor manufacturers have claimed to have the only reactors designed to operate with a full core of MOX fuel, the ABWR was originally designed for the utilization of full core loads of MOX fuel to meet the anticipated fuel cycle requirements of international markets. MOX core designs have also been implemented for specific international customers' existing BWRs to support their fuel cycle requirements. And while some reactor types may require extensive modifications, including control rod additions and other changes which would require a protracted and expensive relicensing, the physical design and core dynamics of the BWR, both the advanced and existing designs, are such that no modifications to the reactor system are required for the use of full core MOX fuel over a wide range of plutonium enrichments. If necessary, the ABWR/BWR cores have the flexibility to easily switch back to conventional urania fuel, again without plant system changes. These technical features make the BWR a preferred technology to support the disposition mission.

With respect to the 25 year goal for completion of the disposition mission for the DOE study, two ABWRs are capable of the disposition of 50 metric tons within 22 years of project inception. A single reactor will disposition this same amount within the current NRC licensed lifetime of 40 years. With license extension to the 60 year operating design life of the ABWR, the same reactor could disposition 100 metric tons of plutonium. The recently completed study of commercial reactors concluded that the disposition of 50 metric tons could be completed by a combination of three operating reactors within their remaining license term utilizing a full core MOX design.

Intermediate MOX fuel designs, with lower throughputs than full MOX cores, are also available for the ABWR and BWRs. This type of fuel has already been licensed, and successfully operated in the U.S. as far back as the 1970s. This fuel could be fabricated in small quantities at existing National Laboratories such as Los Alamos and could be used to initiate a near term program commitment with the Russians, while the U.S. infrastructure for the production of full MOX core fuel is being licensed, constructed and brought up to production capacity.

Commercial fabrication of MOX fuel is ongoing in the United Kingdom, Belgium and France with plans to do so in Japan. Plants with throughputs of about 150 metric tons of MOX per year, comparable to plants already in operation in Europe, can be duplicated in the U.S. for comparable or lower cost than those built and operated in Europe. The plant will meet all environmental requirements and no technical developments are required for its design, licensing, permitting, construction and operation. The design and construction schedule for the MOX plant is compatible with the mission time frame. The costs are predictable and low risk.

LICENSING STATUS

The ABWR is licensed in Japan and two units are under construction. The U.S. standard version of the ABWR has undergone extensive design review and will receive Final Design Approval in June 1994. Design certification is scheduled to be received by December 1995. A standard process exists for NRC license of new plant and new fuel designs. The MOX fuel has been designed to perform within the fuel license envelope of the ABWR, therefore, the ABWR site-specific licensing submittal would reference an unchanged certified standard ABWR plant design. Since there are no plant modifications and the fuel has been designed within the envelope of existing criteria, no schedule delays arising from licensing would be anticipated.

MOX fuel fabrication facilities have been evaluated for safety and licensed in Europe. A hybrid approach with joint DOE-NRC safety reviews integrating both DOE orders and NRC regulations could be adopted to license the MOX facility in the U.S. for the disposition mission.

COST AND SCHEDULE

Minimizing the schedule risk is imperative to the success of the mission. The ABWR is a large advanced reactor available for a near-term, low risk program for the disposition of excess weapons plutonium. At least 11 more ABWR units are in planning in Japan, demonstrating the confidence in predictable construction schedules, costs, and reliable performance of the ABWR. Other utilities in Asia, Europe, and the Americas are evaluating the ABWR for their power generation needs and energy mix requirements. The ABWR fission option uses currently available commercial technology. It was designed to maximize use of factory fabricated components and to facilitate modular construction. The two reactors being built at Kashiwazaki-Kariwa are within budget and on target to meet the 48-month construction goal. This is on schedule for the first unit to enter commercial operation in 1996.

In the U.S., the ABWR First-of-a-Kind Engineering (FOAKE) program is underway and working to an accelerated schedule. This program provides detailed engineering specifications and drawings for the ABWR to U.S. standards and enables cost-effective and reliable procurement of plant equipment.

The cost summary presented is for a plutonium disposition complex, containing ABWR(s) and the MOX fabrication plant located on a green field site.

COST SUMMARY

	Reference	Alternate 1	Alternate 2
Number of reactors	2	1	2
Disposition time	15.8 Reactor Years.	34.7 Years	34.7 Years
Amount	50 MT	50 MT	100 MT
Reactor capital cost	$5,022 M	$2,802 M	$5,022 M
MOX plant capital cost	$525 M	$520 M	$525 M
Reactor O&M cost	$104 M/Yr	$67 M/Yr	$104 M/Yr
MOX plant O&M cost	$58.8 M/Yr	$40.9 M/Yr	$58.8 M/Yr

The existing infrastructure at DOE facilities such as Hanford, INEL, SRS and ORNL are adaptable for the mission and should enable timely approvals for site-specific environmental impact reviews, cost savings, and schedule advantages through the use of those existing facilities. Other support activities are also in place at these DOE sites such as radwaste systems, safeguards, security infrastructure and site utility services. To offset the program cost to the government, there is potential interest in the power industry for private financing of the ABWR as a result of the possible revenue sharing arrangements of the program.

SAFEGUARDS

All DOE and NRC safeguards provisions can be met. The technical and administrative safeguards requirements are easily incorporated into both the MOX fuel fabrication and reactor plant system facilities. All item and practices would be equally applicable to IAEA technical and inspection requirements. The technology for implementing safeguards—near real-time material accountability and plutonium assay systems are available. This makes the use of fission technology a potential for reciprocal agreements with Russia, and other weapons states. Bilateral agreements for transparency and reciprocity—exchange of observers, shared portal monitoring, access to accountability data—can be negotiated. The ABWR Fission option for Pu disposition offers the U.S. an opportunity to take a leadership role in instituting safeguards related technical improvements and innovations into both this U.S. and other overseas Pu related program.

ENVIRONMENT, SAFETY AND HEALTH

The GE study assessments for waste streams, worker exposure and public exposure at the site boundary were found to meet all applicable standards and no conditions were identified that would preclude the environmental approval of the MOX and reactor plant. This is consistent with European experience siting MOX facilities in even more demanding locations than those being considered at U.S. DOE site. For example, the source term for a postulated reactor accident, even under hypothetical severe accident design conditions for operation with a MOX core, is similar to a standard urania fueled core. Thus the use of mixed oxide fuel in the reactor poses no added risk to the health and safety of the public.

On-site evaluations and discussions at applicable DOE sites were also conducted. All sites have been fully characterized for environmental and geological impacts. These DOE sites also have organizational, regulatory and technical infrastructures in place which are fully experienced in the preparation of NEPA, state and local documentation, and the permitting process. This would reduce the effort necessary if the decision was made to construct the complex on an existing DOE site.

OTHER INFRASTRUCTURE

Other infrastructure elements needed to implement the disposition project (e.g., for conversion of metal to oxide feed material, transportation and storage) is readily available. The spent MOX fuel has been evaluated to be acceptable for permanent storage in the repository using the same criteria as for commercial spent fuel. Transportation systems and corresponding regulatory requirements for the project are in place. Geological and nuclear safety evaluations, including criticality uncertainties, associated with other disposition methods do not exist.

COMPATIBILITY WITH DISPOSITION IN RUSSIA

The timely and reliable ABWR plutonium disposition process will promote a responsive agreement by Russia. Reciprocity and transparency agreements are easily incorporated into the proposed disposition process. The choice of the fission option over other disposition methods greatly enhances linkage to preferred Russian disposition methods, and provides added U.S. leverage to negotiate a bilateral agreement for the mission.

PUBLIC ACCEPTANCE

The strategic non-proliferation goals of the program should provide strong rationale and motivation for public acceptance. In addition, a dedicated MOX fuel plant and ABWR plutonium disposition complex on a DOE site would be a major demonstration of a "swords to plowshares" defense conversion program which practically addresses a political and economic need for the creation of peace-time jobs at DOE site locations.

The large electric production from the ABWR makes it attractive for private industry financing of the up-front capital costs with returns from the revenue stream produced from the power sales. This option, then, is potentially a most financially attractive disposition option for the taxpayer. The use of the mature, safe and reliable ABWR technology will instill greater public confidence and trust as compared to lesser developed technology options.

U.S. LEADERSHIP IN WORLDWIDE MANAGEMENT OF FISSILE MATERIALS

If the fission option is not selected by the U.S. as MOX fuel continues to be used by other countries, the U.S. will become increasingly isolated technologically, with the real possibility of losing a leadership role in the management and disposition of international plutonium inventories. The U.S. administration has already established a position that plutonium should have no economic value with Russia and other allies, and has strongly criticized their well thought out decisions for dealing with their energy needs and waste disposal options. As a result, our trading partners have strongly reacted to, and criticized the U.S. position and tactics. Comments from abroad and from experts within the U.S. have concluded the current position may be doomed to failure as a result of its unilateral nature. This approach is not only creating a degraded political relationship with our allies on these issues, but potentially impacts business relationships with U.S. companies. GE is a dominant force with its ABWR in meeting the energy needs of Asia, as our strong participation in the energy market in Japan demonstrates. The administration's current position on civilian plutonium will potentially impact that position. The total GE energy business in Asia produces a positive balance of trade of several billion dollars each year. Continuation of the current U.S. policy could result in loss of that business to Japanese or European suppliers, with the resulting loss of domestic jobs and positive contributions to balance of trade surpluses.

CONCLUSION

In conclusion, we want to thank you for the opportunity to provide this information to the committee in support of these hearings on plutonium disposition. We believe that with the support of the industry, the mission to remove excess weapons plutonium from the world stockpile can be quickly completed, in a cost effective manner, for the benefit of both the United States and the World. We stand ready to provide our continued support to the mission goals.

Thank you.

STATEMENT OF PATRICK MARRIOTT, MANAGER, ADVANCED PLANT TECHNOLOGIES, GENERAL ELECTRIC CO.—NUCLEAR ENERGY

Mr. Chairman, members of the subcommittee, General Electric appreciates the opportunity to contribute to these important hearings. In particular, I will address the Advanced Liquid Metal Reactor (ALMR) Actinide Recycle Program and its potential beneficial impact on the challenges of excess weapons-plutonium disposition and weapons proliferation.

It is ironic that the Department of Energy's Draft Five-Year Plan for Advanced Reactor Programs calls for termination of the ALMR Actinide Recycle Program just as the program is about to demonstrate its potential to improve nuclear waste disposition and to reduce proliferation risks associated with plutonium.

BACKGROUND

Plutonium is an enormous energy source when used as nuclear power reactor fuel, but of course it can also be used in weapons of mass destruction. It is this dichotomy that gives rise to this country's heated and seemingly unending controversy over its "value". Other nuclear nations such as Russia, UK, France and Japan have already determined that plutonium will be used to produce electricity and to contribute to energy independence.

Use of this energy potential to generate power in nuclear reactors would reduce the burden on the environment since there are no hydrocarbon or other global warming gas emissions from nuclear plants. Thus, the public could benefit from this weapons material recycle while recovering some of the initial cost to generate this material via sales of electricity generated from plutonium fueled nuclear reactors.

There are a number of alternative ways to use weapons-plutonium as a reactor fuel, and Congress has supported DOE evaluations of these. More aggressive pursuit of fission reactor options, including use of current LWR plants, is recommended. Unfortunately, the second phase of the DOE-sponsored evaluation of the ALMR for this application was terminated in mid-contract and the results will not be reported. This situation should be corrected because the ALMR has unique properties for weapons-plutonium disposition. In addition, Russia prefers the use of LMRs to convert its plutonium to electricity, which it desperately needs to replace its older, less safe RBMKs (Chernobyl-type) reactors.

PLUTONIUM DESTRUCTION IN ALMR

Unique to fast spectrum reactors, such as the ALMR, is the ability to utilize all minor actinides and all isotopes of uranium and plutonium as fuel. Because of its closed fuel cycle, the ALMR alone of all nuclear fission options has the potential to destroy almost all (99.9%) of the weapons fissile material and send essentially no plutonium to a repository. The U.S. has on the order of 100,000 kg of weapons-grade plutonium, of which about 50,000 kg is considered "excess" and could be available for use as reactor fuel. This would be sufficient to operate three ALMR plants totaling 5600 MWe, enough power for a city of six million people, for 35 years while destroying the plutonium.

ALMR AS HIGH-LEVEL WASTE CONSUMER

It should be noted that the ALMR is not being developed solely for excess weapons-plutonium disposition, nor would we recommend any reactor be developed solely for this purpose. However, the ALMR has the potential to perform this mission without compromising its primary near-term goal of producing competitively priced power utilizing processed spent fuel from current operating plants.

In fact, significant improvements in nuclear waste management appear possible with the use of the actinide recycle technology being developed under the ALMR Actinide Recycle Program as an extension of metal-fuel pyroprocess technology. Processing spent fuel permits the long-lived actinide elements (plutonium and other man-made heavy elements) to be used for fuel and essentially eliminated. The radiological toxicity hazard of the remaining waste will return to natural uranium levels in several hundred years rather than hundreds of thousands of years. In addition, the required waste repository volume can be reduced by a factor of four or more.

PROLIFERATION BENEFITS

In addition to the long-term disposition benefits sited above, the ALMR fuel cycle, using a technique called "pyroprocessing," has significant near-term proliferation benefits. Metal fuel made by this process is highly proliferation resistant, in the reactor and in all stages of the fuel cycle. This process, as contrasted with the traditional aqueous (PUREX) process, results in a plutonium/transuranic product with high heat and high radiation outputs.

The high heat output, greater than ten times that of weapons-grade plutonium and three times that of reactor-grade plutonium, complicates, and may even prevent, the design of simple nuclear devices, because plutonium self-heating would cause weapons material dimensional changes. It would also impose formidable challenges in selection of materials to contain and detonate the weapons.

Pyroprocessed plutonium/transuranic radiation levels are in general three-to-four orders of magnitude higher than for weapons-grade or reactor-grade plutonium. Therefore, remote fabrication and assembly facilities would be needed for all stages of weapons production and the very high radiation levels outside a weapon constructed with pyroprocessed plutonium would preclude close proximity exposures for more than very brief periods.

And of course, once the plutonium has been transmuted in the process of generating electricity, it is no longer a proliferation threat; in contrast, weapons material in underground storage remains a threat.

PROGRAM STATUS

Six years of ALMR plant design has shown its economic potential and licenseability. Ten years of IFR (Integral Fast Reactor) research and development at Argonne National Laboratory have resulted in robust metal fuel fabrication and simple pyroprocess fuel recycle technology. This is a major part of the technology base for the ALMR commercial reactor design.

The 1992 Energy Policy Act calls for two activities to be completed by September 30, 1996: (1) submittal for preliminary design approval of the ALMR and (2) evaluation of the actinide recycle technology to determine if it can economically reduce the volume and toxicity of long-lived nuclear waste. The objective is to complete sufficient development work to be able to evaluate, on a sound technical basis, whether or not the ALMR Actinide Recycle Program should be carried on to completion. Activities have been proceeding on schedule to meet the key review/decision date, only two years away. However, the program is presently targeted for termination by the Administration, even though the effort to reach the 1996 decision point can be achieved for essentially the same cost as immediate termination.

In addition to this basic program for energy production, the completion of the evaluation of the ALMR as a weapons-plutonium disposition option should be funded.

CONCLUSIONS

"Burning" available plutonium as fuel in the ALMR would extend U.S. energy resources, generate revenue, reduce required nuclear waste repository volumes and long-term toxicity, and reduce the environmental impact of energy generation. However, the U.S. Administration wishes to forgo the use of plutonium despite our nation's huge and growing dependence on imported energy supplies. Other nuclear nations (Japan, UK, France, Russia) are planning to use plutonium in their nuclear reactors as their energy options are much more limited in seeking their goal of energy independence.

The key to proliferation-resistant, economic utilization of plutonium is the metal fuel cycle and its pyroprocessing, a technology the U.S. pioneered and continues to lead. The necessary development work to prove out the fuel cycle and reactor concept is well underway in the ALMR Actinide Recycle Program. Termination of the program at this time, only two years away from the key decision date of September 1996, does not make technical or political sense. The decision is also being made before the receipt of the DOE requested NAS study on separation and transmutation technical feasibility. The program, in reality, could be a significant contributor to the Administration's praiseworthy goal of proliferation risk reduction through the intelligent management and disposition of plutonium. The other nuclear nations are marching ahead without us. Do we want to continue to lead, or to defer confronting our plutonium problem for another generation?

The ALMR Actinide Recycle Program, including the ALMR modular design with its excellent passive safety and economics and development of proliferation-resistant metal fuel pyroprocessing, should be continued consistent with the 1992 Energy Policy Act. The evaluation of the ALMR for excess weapons-plutonium disposition should be resumed as part of a reinvigorated assessment of fission reactors for this important national and international challenge.

June 2, 1994

Hon. J. BENNETT JOHNSTON,
Chairman, Committee on Energy and Natural Resources, U.S. Senate, Washington, DC.

DEAR SENATOR JOHNSTON: We are very pleased to submit this statement for the record for further consideration by the Senate Energy Committee on the subject of weapons plutonium disposition.

The Isaiah^{SM} Project Group, consisting of a consortium of private companies (Battelle Memorial Institute, Newport News Shipbuilding, and Science Applications International Corporation), started the development of the Isaiah Project more than two years ago. At that time, we saw a window of opportunity for the United States and Russia to take near-term steps to assure that excess plutonium does not fall into the wrong hands or that it is not used in the future for nuclear rearmament.

We feel that the need for a bilateral plutonium disposition program today is greater than ever and that the proposed Isaiah Project may provide the basis for a uniquely viable, near-term program.

We would welcome the opportunity to provide further information or answer any questions the Committee may have.

Sincerely,

L.R. DODD.

[Enclosure.]

STATEMENT OF THE ISAIAH PROJECT GROUP

SUMMARY

The growing inventories of inadequately secured and unsafeguarded plutonium in Russia represent a threat to the security of the United States (U.S.) and the international community. The U.S. needs to respond to the threat before the "clear and present danger" becomes an international crisis.

The Presidents of the U.S. and the Russian Federation (RF) announced in September, 1991 that the U.S. and the former Soviet Union (FSU) would make massive reductions in the numbers of deployed nuclear warheads. At that time, members of the Isaiah^{SM} Project Group[1] (IPG) saw a window of opportunity for the two countries to implement a plutonium disposition program that could help assure that fissile materials removed from those nuclear warheads would never again be used in weapons. Since that time, a number of studies have been performed that have only re-confirmed the existence of a serious international security issue and the need for dealing with that issue now.[2] They have also confirmed that the technology exists today for effectively accomplishing weapons plutonium disposition. Today, we would suggest, the window is not open as far as it was in 1991; yet little has been accomplished beyond studies.

Additional studies, either unilateral or bilateral, will not solve the plutonium problem. Although scientists and academicians in both countries will be eager to participate in such studies, the best possible outcome would be to find "better, future solutions" at the cost of unnecessary and dangerous delays, when "good, currently available solutions" could be implemented without delay.

The interests of international security would be best served by the Governments of the U.S. and the RF entering into a bilateral agreement for a near-term program for securing and safeguarding excess plutonium and highly enriched uranium and for expediting disposition of excess plutonium. We believe that the attributes of a viable program must include the following:

- reciprocal and parallel activities in the U.S. and the RF
- utilization of existing, environmentally sound technology and implementable in the near-term
- minimal total costs to the U.S. taxpayer and minimal near-term appropriations required from Congress (private sector financing)
- significant financial assistance to the RF
- consistency with nuclear policies in both countries
- consistency with U.S. international arms control and non-proliferation goals
- help in solving U.S. plutonium storage problems
- broad public acceptance.

We believe that the proposed Isaiah Project, described in the attached brochure, can form the basis for a successful bilateral program. The goals as well as the specific approach have already received the support of the leadership of key organizations in the RF (see attached protocol).

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[1] The Isaiah^{SM} Project Group is a consortium consisting of Battelle Memorial Institute, Newport News Shipbuilding, and Science Applications International Corporation.

[2] Excellent studies related to the plutonium problem have been performed by the Office of Technology Assessment and the Rand Corporation, as well as the National Academy of Sciences.

BACKGROUND

International security risks are the driver for dealing with U.S. plutonium

FSU plutonium represents clear and present danger to U.S. and international security

The National Academy of Sciences has described the growing inventories of inadequately secured plutonium as a "clear and present danger to national and international security."[3] There are really two threats. First, there is a significant risk that weapons materials may be diverted to terrorists or sub-national groups, or to "would be" nuclear states. This risk is a direct result of the breakup of the FSU and the subsequent breakdown in security, economic, and political infrastructures. The growth of organized crime within the former Soviet Union has substantially increased the possibility that weapons materials may be diverted.[4] In announcing this week that the FBI will be opening an office in Moscow to help the Russian Government combat this threat, FBI Director Louis Freeh stated that "it was essential to take preventive action "before a major nuclear incident occurs."

The second security threat is that, as long as large inventories of excess nuclear weapons materials exist, future governments have a ready capability to rebuild massive nuclear arsenals. This risk is particularly serious in the RF where there is continued political instability, and future Governments controlled by ultra-nationalistic groups cannot be ruled out.

U.S. plutonium represents political problem

While the plutonium situation in the FSU represents a security problem, the plutonium situation in the U.S. may best be characterized as a political problem. While there may be economic and technical reasons for consolidating the storage of excess weapons plutonium, and there may be a political advantage placing some of the inventories under international safeguards, there is little concern within the U.S. that U.S. plutonium may be illegally diverted or that our Government will decide to redeploy it for new warheads. There is no real sense of urgency for actually destroying excess U.S. plutonium inventories. To the contrary, there is a view among some that developing and implementing a U.S. plutonium disposition plan involves many difficult political issues and, therefore, the country will maintain the status quo.

The risks of maintaining the status quo are two-fold. First, in the absence of a credible plan for destruction of excess U.S. plutonium inventories, public acceptance for domestic programs for consolidating and improving plutonium storage and for continued dismantlement of nuclear warheads may be jeopardized. Second, and more importantly, it is unrealistic to expect that the FSU will take steps toward consolidating, safeguarding, and ultimately disposing of their excess plutonium if the U.S. does not take similar steps in parallel.

U.S. should structure U.S. plutonium program to reduce international security risks

The priority goal in the development and implementation of a U.S. plutonium disposition program should be the reduction in the international security risks resulting from the plutonium situation in the FSU. A program designed primarily to address the U.S. plutonium problem, or one diluted by issues related to far less urgent international plutonium policy goals, will not address the "clear and present danger" on a timely basis. In fact, it makes little sense to talk about massive reductions in U.S. plutonium inventories in the absence of an agreement for a parallel program in Russia.

The overall goal of reducing worldwide inventories of separated plutonium is not well served if the U.S. appears to want to change foreign plutonium policies or nuclear fuel cycle practices, while we continue to maintain massive inventories of weapons-grade plutonium with no real plan or commitment for reducing those inventories.[5]

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[3] "Management and Disposition of Excess Weapons Plutonium," Committee on International Security and Arms Control, National Academy of Sciences, 1994.

[4] Mr. Seymour M. Hersh, in his article "THE WILD EAST", appearing in the June, 1994 issue of *The Atlantic Monthly,* calls attention to the threat for diversion of weapons and weapons materials by the growing criminal element in the former Soviet Union. He states "The criminal element in Russia is now in the process of hijacking the state, and is threatening to erode the government's control over its stockpile of 15,000 tactical nuclear warheads and its hundreds of tons of weapons-grade plutonium and enriched uranium" . . . "there is powerful evidence that organized crime in the former Soviet Union has been systematically seeking access to the nuclear stockpiles, with their potential for huge profit. There is also evidence that the Russian government is unable to account for all its bombs and all its weapons-grade uranium and plutonium."

It should be readily apparent that a commitment to a credible program for a massive U.S./Russian decrease in weapons plutonium inventories would send a powerful message to the entire international community that the U.S. is committed to nuclear non-proliferation and arms reduction goals. As a result, the U.S. policy position would be considerably strengthened.

Addressing the FSU plutonium problem will require U.S. reciprocity and financial assistance

A program for reducing the risks of the potential diversion of plutonium in the FSU will include, as a top priority, the securing and safeguarding of all excess plutonium and highly enriched uranium. Achieving this first step requires completing a number of difficult tasks. Materials accounting will be required to assure that all "excess materials" have been identified; some plutonium and uranium will need to be processed in order to place it into a form suitable for storage; and consolidation may be required in order to improve the economics of safe, secure, safeguarded storage. Russia does not currently have adequate plutonium storage facilities; the U.S., under "Nunn-Lugar funding," is now assisting Russia in designing a storage facility for components from warheads being dismantled as a result of the START agreements.

To further reduce the risks of diversion, and in order to assure that future Governments do not redeploy today's excess plutonium in future warheads, we must see to the destruction of the excess plutonium. Although total destruction of plutonium is not now viable, the National Academy of Sciences has defined a "spent fuel standard" as a reasonable basis for meeting the objectives of non-proliferation. Although the National Academy of Sciences has identified three technical options for meeting the spent fuel standard,[6] the RF has already made it clear that the only plutonium "destruction" option they will consider is the use of it as fuel in power producing nuclear reactors. Russia now has no capability for using plutonium fuels. Establishing that capability will require the construction of a fuel fabrication plant and the conversion of existing reactors or the construction of new ones.

It should be clear that tackling the international security issue will require the expenditure of significant resources—billions of dollars—in Russia. Russia does not have those resources, given competing economic and political priorities; they are currently seeking substantial financial assistance just to shut down their three remaining plutonium production reactors.[7]

In addition, history would suggest that it is highly unlikely that the RF will take any steps that unilaterally decrease their nuclear weapons capability.[8] It is to be expected that reciprocity on the part of the U.S. will be required by the Russians before they take any steps involving the accountability, the safeguarding, and the destruction of excess plutonium. A high degree of parallelism will make the reciproc-

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[5] Discussions of the proposed Isaiah Project with a large number of senior International Atomic Energy Agency staff in March, 1994, surfaced a view among those staff that it is unlikely that the U.S. will do anything meaningful to reduce plutonium inventories.

[6] The NAS found that placing plutonium in spent fuel, vitrifying it with high level nuclear wastes, or, possibly, placing it in deep geological boreholes were three technical options for meeting the spent fuel standard. There is some disagreement in the technical community as to whether or not vitrifying plutonium actually provides as good a protection from terrorists as placing it in spent fuel. The issue is the relative technical difficulties in recovering the plutonium from the two mediums. Clearly, vitrification or deep-borehole disposal is not as effective as the spent fuel medium in protecting the plutonium from future Governments. A Government wishing to rebuild a nuclear arsenal would clearly prefer the weapons-grade plutonium contained in the vitrified glass or the borehole over the "reactor-grade" plutonium contained in spent fuel. (Plutonium "placed in spent fuel" is actually reduced in quantity by at least 40% as a result of the fission process; the remaining plutonium is degraded from "weapons-grade" (containing about 6% Pu-240) to "reactor-grade" (containing about 24% Pu-240). The vitrification and geological borehole options do not destroy or degrade any plutonium.)

[7] The recent agreement to "shut-down" the remaining reactors at Tomsk and Krasnoyarsk is predicated on being able to obtain financing for replacement energy capacity required for district heating and electricity production. The Russians have estimated that replacement capacity will cost $700 million. It is doubtful if current energy prices in those regions can support that kind of investment; actual cessation of weapons plutonium production in Russia may require substantial financial assistance from the U.S.

[8] During meetings in Moscow in February, members of the Isaiah Project Team were told by one Russian Ministry of Atomic Energy official that there was considerable displeasure over the one-sidedness of the uranium agreement, where the RF agreed to sell 500 MT of weapons-grade uranium to the U.S. without any agreement on the U.S. side for a reduction in U.S. weapons-grade uranium inventories. It was suggested by this individual that such a "mistake" would not be repeated with respect to plutonium inventories.

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ity more evident and the program more palatable to the RF. That is, each step along the arms (and risk) reduction path must be taken concurrently by the U.S. and Russia, and the RF will require the same degree of transparency, intrusiveness, and irreversibility on the part of the U.S. Moreover, it could be argued that the U.S. should want nothing less in the way of reciprocity and parallelism while moving forward with a domestic program.

Considering the arguments for reciprocal and parallel programs in the U.S. and Russia and considering the National Academy of Sciences' finding that most key Russian officials are adamant that weapons plutonium only be used as reactor fuel, it can be concluded that "placing" U.S. plutonium in spent fuel is the most viable technical option for providing a basis for a bilateral plutonium disposition agreement. Considering the fact that the "spent fuel" option is the only one that does not require further technical development, timeliness also favors this option.

THE ISAIAH PROJECT

The Isaiah Project provides a viable basis for a bilateral program for securing, safeguarding, and disposing of plutonium

The proposed Isaiah Project is a private sector initiative intended to assist the U.S. Government in addressing the plutonium problems in Russia and the U.S. The concept was developed jointly by the Isaiah Project Group consisting of Battelle Memorial Institute, Newport News Shipbuilding, and Science Applications International Corporation and was formalized as a proposal to the Department of Energy in August, 1993.

Requirements for a successful and timely bilateral plutonium program

The Isaiah Project was developed from the premises outlined below. We believe that these premises could form the basis for criteria for comparing various plutonium disposition concepts.

The "clear and present danger to national and international security" requires a program that can be implemented sooner rather than later. Spending time and money to develop new technologies or to develop "better solutions" is counterproductive to the urgent need for reducing the security risks.

A successful U.S. program for addressing the international security problem will be based on reciprocal and parallel activities in Russia and the U.S., and will provide financial assistance to the FSU in order to realize the goals.

A bilateral plutonium disposition program cannot be developed unilaterally. Effective Russian participation requires a joint understanding of the problem and joint development of the goals, terms and conditions for the program. However, a program involving significant financial assistance does provide leverage for accomplishing related goals. For example, it would be inconceivable for a meaningful plutonium disposition program to move forward while Russia continues to produce new weapons plutonium for use in weapons.

The program should be structured to achieve maximum credibility in the international community and to achieve maximum public acceptance in the U.S. Therefore, international safeguards should be applied to all materials and facilities utilized in plutonium disposition programs in both the U.S. and the RF, and reactor facilities should be licensed by each country's nuclear regulatory authority. In addition, defense production missions (e.g., tritium production) should not be co-located with weapons plutonium disposition.[9]

Unambiguous signals should be sent to the rest of the world concerning U.S. plutonium policy. Specifically, it should be made perfectly clear that the U.S.' primary interest is the destruction of its plutonium while assisting the RF to do the same. Issues such as the economic value of plutonium are not relevant. Measures that should be taken to send that message would include: 1) restricting weapons plutonium activities in the U.S. to dedicated Government-owned facilities and 2) prohibiting, by law, the reprocessing of spent fuel resulting from the disposition program.

A realizable program will minimize the costs to the U.S. taxpayer for both the domestic portion of the program as well as the international portion. Near-term appropriations of significant funds for either portion are not realistic in the near future.

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[9] Application of international safeguards to a plutonium disposition mission would be very difficult if weapons materials were being produced in the same facilities. More important, sending the signal to the international community that the U.S. is just "converting one weapons material into another" could be very counterproductive to U.S. non-proliferation and arms control goals.

A bilateral program should effectively address U.S. domestic plutonium issues. That is, it should be able to provide for near-term consolidation of excess U.S. plutonium and provide storage relief for warhead disassembly activities at Pantex.

Summary of the proposed Isaiah Project

The Isaiah Project Group (IPG) has proposed to provide the U.S. Government with the two key tools required for a plutonium disposition program that can effectively deal with the international security issue: reciprocity and financial assistance for the FSU.

The IPG would acquire, complete, and give to the U.S. Government two nuclear power plants located in Washington State. Private financing would be utilized for acquisition and completion of the plants. In addition, private financing would be utilized to modify and complete the Fuels and Materials Examination Facility (FMEF) at Hanford. These facilities together would provide the U.S. a complete capability for consolidating, securing, safeguarding, and disposing of excess U.S. plutonium. Consolidation of U.S. excess plutonium could commence within two to three years after authorization of the program and conversion to spent fuel could commence within six years after project authorization.

The IPG has also proposed to borrow from the private sector $2 billion to be utilized for assisting the Russian Government in implementing a program in Russia for consolidating, securing, and safeguarding all excess weapons plutonium and uranium in the near term, and for disposition of excess plutonium in the longer term. Funding for accomplishing these objectives could be made available within six months after Congressional authorization of the project.

The IPG financing would be secured by a contract with the U.S. Government that provides assurances that the two reactors would be operated at a minimum level over their design lifetime. This provides necessary assurances that revenues generated from the sale of by-product electricity will be sufficient to repay the debt incurred.

Without the international component of the Isaiah Project, the program is nearly revenue neutral. That is, revenues from electricity generation may be sufficient to repay the debt incurred for acquisition and completion of the reactors, and for reactor operation and maintenance, and plutonium fuels. With the proposed $2 billion fund for the international component, DOE will be required to offset some of the reactor operating, maintenance, and fuel costs.[10] Although no detailed analysis has been performed, it is believed that a substantial portion of these operational costs would be offset by avoided plutonium storage costs.[11]

Vision for the Russian component of the Isaiah Project

Proponents of the Isaiah Project have shared a vision of the governments of the U.S. and the RF jointly agreeing to a near-term program for securing and safeguarding all excess weapons materials and committing to a longer-term program for the destruction of excess plutonium.

The steps required to accomplish the vision of the Isaiah Project are outlined below along with suggested completion dates:

1. Russia and the U.S. agree on the general goals of securing and safeguarding excess materials, and for a disposition program involving the use of mixed-oxide fuel in two or three dedicated and internationally safeguarded reactors in each country. The two countries develop a joint implementation strategy. (August, 1994)
2. Joint working group evaluates system requirements, cost estimates, and schedules for both the U.S. and Russia; evaluates specific implementation options in the RF. (July, 1995)
3. Concurrent with step 2), the U.S. completes NEPA requirements for the domestic portion of Isaiah Project. (Record of Decision: December, 1995)

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[10] The actual cost to DOE will be dependent on the borrowing schedule for funding the Russian component of the Isaiah Project and the extent that those funds are used for loans rather than grants. In the extreme case that the funds are utilized only for loans, then the Isaiah Project is nearly revenue neutral even with the international component. However, it is doubtful if the objectives for the Russian component can be met in the foreseeable future without a significant portion of the funds utilized as grants (preferably in the form of progress payments).

[11] With the near-term capability for consolidating excess plutonium at the FMEF facility, within the context of the Isaiah Project, there is considerable potential for significant reductions in current plutonium storage costs. Costs for storing plutonium just at Hanford are now on the order of $35 million per year. Presumably, similar costs are being incurred at DOE facilities in Idaho, at Rocky Flats, Savannah River, Los Alamos, and Lawrence Livermore. At the present time, there is no approved plan for consolidating these materials or for taking other actions that will reduce ongoing storage costs.

4. Russia and the U.S. agree on a specific implementation plan in each country. (March, 1996)

5. Congress authorizes Isaiah Project, including authorization for the Russian component. (June, 1996)

6. Funds are borrowed from the private sector by the IPG for acquisition and completion of the required U.S. facilities. Additional funds are borrowed to assist in the implementation of the Russian program. (December, 1996)

7. With U.S. assistance in the form of "progress payments," the RF consolidates, secures, and places under international safeguards all excess plutonium and weapons uranium. In parallel, excess U.S. plutonium is consolidated at the Hanford FMEF facility, in preparation for conversion to fuel. (1997-2000)

8. With U.S. assistance, the RF develops a plutonium (mixed-oxide) fuel fabrication capability sufficient to supply two to three dedicated reactors for plutonium burning. In addition, a capability is developed to use mixed-oxide fuel in two to three dedicated reactors. In parallel, a mixed-oxide capability is developed at Hanford (FMEF building), and the WNP-1 and WNP-3 nuclear plants are completed for use as dedicated "plutonium burners." (1996-2001)

9. Sometime around the year 2000, both countries start the process of destroying excess weapons plutonium. In the U.S., over a period of 40 years, 80 tonnes of weapons-grade plutonium would be destroyed, producing 1600 tonnes of spent fuel. This spent fuel would ultimately be destined for the geological repository, which is being designed for 70,000 tonnes of fuel. Thirty-two tonnes of the plutonium will actually be destroyed, with the remaining 48 tonnes converted from "weapons grade" plutonium to "reactor-grade."

We believe that this vision is achievable and that the U.S. cannot afford to delay. The Isaiah Project may uniquely provide the basis for a near-term bilateral program for addressing the international security problem, and it has the additional benefit of addressing the U.S. plutonium problem. We know of no other proposal or concept before the U.S. Government that:

1. Utilizes proven technology,
2. Provides the capability for significantly reducing the threat of materials diversion in the FSU in the near-term, and essentially eliminating the possibility for Government re-use in weapons in the longer-term,
3. Can be performed at lower costs to the U.S. Government,
4. Can be achieved on a shorter schedule, and
5. Has the potential for providing near-term plutonium consolidation in the U.S. with attendant cost savings, and storage relief for continued warhead dismantlement operations at Pantex.

Whether the Isaiah Project is supported or some comparable effort is chosen, the international security risk is real and the U.S. Government needs to move forward while the window of opportunity is still open.

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